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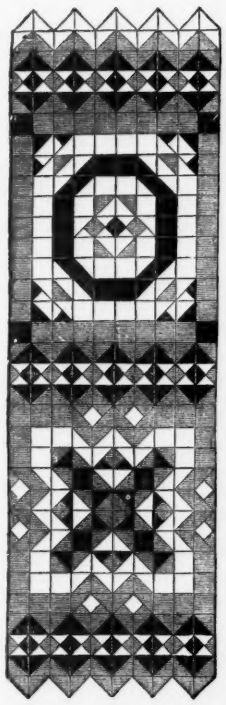


The Sense and the Nonsense of the "New Social Movement."

IN the subject of what has for some time been referred to as the New Social Movement, the political press gives a tentative and uncertain sound. It is now several weeks since it leaked out, in a not very intelligible mode, that certain *pour-parlers*, — we fail to find an equivalent English word, — had taken place between some of the more thoughtful members of the working classes and a few of the peers, with a view to the careful discussion, and, if possible, to the alteration, of the chief evils afflicting the industrial portion of society. In the absence at Vienna of the suggester of this investigation, Mr. Scott Russell, the usual series of partial disclosures and efforts to throw off the bugbear of responsibility, followed on the premature publication of the intended proceeding. Mr. Russell has now returned, and has addressed to the journals his own statement, both of what is intended and of the steps that have already been taken. Political traders, fearing lest the wind should be taken out of their sails, are naturally angry and uneasy. The men who have the courage to look social dangers in the face, from a practical standpoint, have been called quacks, deluded and beguiled by a spurious philanthropy. The expression is suicidal. A quack is not a person deluded and beguiled; he is a deluder and a beguiler. But better those beguiled by the promises of philanthropy, even if spurious, than those who shut their ears to all the claims of their fellow men.

To our own readers the subject is not new. It may be approached in our columns with the sense that neither party spirit nor fashionable cant is likely to tincture the language employed. And we believe that we are alone among the public writers of the day who have pointed out that the results of a patient and philosophic dissection of the social condition of England, such as De Tocqueville has applied to that of France and of America, would reveal elements of danger at which even optimists might stand aghast. The industrial effect of the steam-engine, commercially or financially considered, is an augmentation of the productive power of the country, to an amount that is indefinite, if not unlimited. But the effect of that great disturber of labour, in a social direction, has never yet been fairly faced or rationally discussed. It may be urged, and not without justice, that the good effects will be permanent, and the evil effects transitory. Just so. But when transitory evil effects attain a certain magnitude, they are called by the name of Revolution.

It is, of course, very easy to laugh at Mr. Scott Russell and his supporters. That it is right so to do is another matter. From our point of view, nothing can show a greater absence of sound principle than such a crackling of thorns under a pot. Public gratitude is due to those who, gravely and seriously, bring under the attention of grave and serious men those points which are felt to be grinding social evils by a very large portion of the community. The wilder the projects of improvement (supposing them to be wild) the better service is done by withdrawing them from the stifling atmosphere of the nightly club to the open air of public discussion. Men familiar with the progress of invention well know how fondly an inventor clings to the pet child of his brain. He is ready to suffer martyrdom on its behalf. Indeed, he not unfrequently does suffer something equivalent to fine and imprisonment for his devotion to an idea. Take this man into the museum of the Patent Office. Show him, by evidence that he cannot gainsay, how the same idea has occurred to other men; how it has led to failure here, and to partial success there; and how all that remains uncertain is some detail of application, and you convert the dreamer into a worker. So it is with the political or social reformer. Bring his nostrum to the test of experience. Put his theory in plain English. Show him how old it is. Unearth its first expression in choice Greek, or in nervous Latin, or in a tongue older than either; show him who have adopted it,—under what circumstances, and with what result,—and then compare this historic teaching with the actual condition and circumstances of England in the nineteenth century; and you may convert the idealist—so only that he be honest—into a real benefactor of his kind.

With regard to the assumption that underlies the entire scheme, it is one extremely displeasing to a certain number of people. It is true that this number is very small; but then it has the ear of the public—or rather it has the exclusive hold of most of the places from which the public can be addressed. It is an assumption such as underlies the existence of the Social Science Association; and which has called forth vials of wrath from politicians of a party cast. It is the idea that it is irrational to commit the legislative treatment of the most delicate questions of social progress to the management of the House of Commons. That a senate composed, in its two chambers, of some thousand men, not a quarter of whom have any special, educated knowledge of the subjects on which they are empowered to make laws, and perhaps not a dozen of whom are gifted with the rare qualities necessary for a real legislator, should be able, by counting noses, not only to order *leges Angliæ mutari*, but to tinker the new enactments, clause by clause, appears, to many thoughtful men, to be a piece of savage barbarism. Change of law, according to the view of such men as we mean, should be effected in a very different mode. The general, well-considered desire of the great mass of the educated population of the country should be first expressed. In fault of a better system, this is, perhaps, not altogether impossible to be effected by our present parliamentary system. Supposing that an adequate majority of the representatives of the nation—say two-thirds or four-fifths—arrive at a resolution to the effect that a certain enactment is desirable, it should then be the function of a small and select committee—three, five, seven at the outside—to draw up in the plainest and most idiomatic English, the new canon of law. Such a mode of dealing with the subject would be worthy of an intelligent people, and consistent with such a legislative code as Bacon, nearly four centuries ago, blushed to think his country was without. A great clamour will resound from St. Stephen's when that piece of plain common sense is first fully brought before the public. And, as tending in this direction, the proposal for a quiet discussion between small representative bodies, of the great evils that press on the poor, has already begun to excite a certain clamour. Thus far, therefore, the new movement has a presumption in its favour among thoughtful and cultured men.

When we come down to the seven points, the decision of which forms the core of the subject, the importance of calm and profound discussion becomes still more evident. For each of these points may be approached in a different mode. It may be regarded either theoretically —and that after a red, a white, or a party-coloured theory,—or practically. It may be viewed as a subject for legislation or as matter for voluntary organisation. The mere reference to these different modes of treatment is enough to show that the policy of let-alone is not that of inscrutable wisdom.

The first want is one that commends itself warmly to the sympathy of the *Builder*. It is "the want of family homes, clean, wholesome, and decent, out in pure air and sunshine." Nothing can be more true. But how is this a matter for Legislation? In one sense, indeed, it may be so considered. That is in a negative or preventive point of view. It would be well for it to be rendered impossible for the Legislature to give great and irresponsible power to public bodies to appropriate large districts of territory, especially of city property. The sufferings caused by the enormous clearances that have been effected in London by the different railway companies, especially by that great contractor's line, the London, Chatham, and Dover, have been cruel. Not the very poor alone, but the humble middle-classes have been unnecessarily unhoused; and with what result?—to leave a large space of unoccupied building land in the very centre of the metropolis. To destroy rent, to waste space; in fact, to annihilate property to an amount which, if represented in figures, would be appalling. The protection required is not so much by, as against legislation. The benefactor required is not Parliament, but Associated Building Societies.

Again, as to No. 2. "The organised supply of wholesome, cheap, nutritious food." What does this mean? Is it the utterance of an Englishman? Does it mean that the State is to supply food? Is Parliament to set up a market? One thing has been done,—nor can we doubt that, all things considered, it has been wisely done. The market of the world has been opened to Englishmen. We have no longer taxes on the staff of life—on the main elements of human sustenance. Further progress in this direction is matter, not for agitation, but for fair and well-considered discussion. There is, for instance, the question of malt. There is the question of tea. A certain amount of national income must be raised,—unless we wish to go back to woad and to acorns,—for national defence, justice, teaching, governing. Where the shoe shall pinch is matter for consideration. Happily, it is pinching less every year. But this is no subject to be dealt with in the wholesale manner suggested by the phrase we have quoted. It is eminently a subject for statistical illustration. It affects all classes of the community,—by no means the industrial classes alone. The supply of food must always be carried on by a self-acting organisation, such as that which daily, without check or hindrance, supplies the wants of more than three millions of people in the metropolis. The proportion, indeed, of distributors and producers of food, is probably very ill-adapted to the utmost efficiency. The extra cost involved by the existence of a disproportionately large number of retail tradesmen and middle men is large. But it will hardly be contended that this is a point that can be touched by legislation. Still, it will have to be touched.

One thing then only we take, under this head, to have any claim to be considered as matter for legislative interference. And even

here, it is rather the administration than the power of the law that is at fault. This is a matter, too, in which we can, if we will, help ourselves. It is the punishment of dishonesty in tradesmen. It is the adulteration of food, whether by craft or by right. Let a sharp, searching, and judicious hunt be made after false weights, false measures, and false goods. Let sanded sugar and shoddy cloth be no longer matters to grin at, but to go to gaol for. Let the law and its officers, and, above all, public principle and public indignation, do their duty here, and we may relegate the second point to the region of ordinary life;—not, however, to be there neglected.

We reach Utopia itself on the third point,—the want of leisure for the duties and recreations of family life! Of course, we all want leisure. What has the Legislature to do with it?' To a certain extent we have recently made important steps in that direction. We have been compelled, unnatural as it may seem, to prohibit cruelty to children. We have abolished infant chimney-sweeps. We are endeavouring to rescue the poor young savage of the brick-ground. We are inspecting mines and factories. Wherever it is shown that tyranny exists, that the young and the helpless are forced to undue labour, the Legislature has stepped in—or will step in. More than that it is unjust to ask. Our great Christian holiday exists by law. Long may it so exist; but were it not of prescription, it could never be enacted. Men, too, are taking this point into their own hands, and that with no faltering grasp. Look at the London shops on Saturdays! Look at the engineers' strike! All that in a wisely-ordered State the law can do to protect leisure is, to prohibit tyranny—whether it be the tyranny that sends a boy up a chimney, or the tyranny that forbids the manufacturer to keep his wheels moving, and his costly machinery at work, for more than a fixed number of hours per week.

The fourth want specified is that of organised local government to secure the well-being of the inhabitants of villages, towns, counties, and cities. We are with those who maintain that some legislative action may be desirable in this respect, more especially for the unification of the innumerable local boards, vestries, and authorities of all sorts, that do *not* govern the metropolis. Still, to expect to remedy the whole evil lamented by direct legislation is to put the cart before the horse. The evil lies far deeper than to be affected by superficial treatment. The want is not that of councils, but of counsellors. The extreme reluctance of the more educated and better qualified members of society to take part in local, municipal, or even national government, is not peculiar to this country. It is equally to be observed, and equally to be lamented, in France and in America. It has long been most palpably shown in England by the withdrawal of the higher names of finance and of commerce from competition for what used to be regarded as civic honours. How far it keeps the best men out of Parliament we are, perhaps, hardly aware. In France it has led, and threatens again to lead, to the establishment of a pure kakistocracy,—to the unresisted seizure of power by the most ignorant, the most violent, and the most base. In America,—and notably in the municipal government of New York,—it has had the same results. In England, indeed, one of the results of the measure of last year for the establishment of a national education was the authorisation of a new set of local councils, of a nature not dissimilar to that indicated by the language of Mr. Scott Russell. What has been the result? Look at the London School Board! Look at the general movement throughout the country! It would almost seem that no competent man will devote his time to the gratuitous service of the public unless he has a hobby, a strong sectarian fanaticism, or a craze. Possessed by one or all of these demons, he comes to board or vestry, rather with the view of hindering the success of his rivals than with any hope of establishing his own schemes. "Perish education," says A., "rather than let it increase, even incidentally, the influence of B., C., and D.;" and so on with the other letters of the alphabet. In the House of Commons we witness contemporaneously eager haste to succeed in a party struggle, and the dislike or inability to speed those practical measures of administrative improvement which every one admits to be requisite. It would seem as if the discredit thrown by modern ideas on the hereditary principle, as the great link between all classes of society, had led to a disintegration of the social bond, for which the remedy is not easy to suggest. To suppose that this remedy is to be found in Acts of Parliament is to imagine, not that the people make the laws, but that the laws make the people.

A like confusion of ideas is evident as to the fifth point,—the want of technical teaching for the workmen. This is eminently a matter for masters and men to settle between themselves. It is not a subject to be dealt with by a Parliamentary vote. As to primary education, a great and long-delayed effort is now being made. Secondary and special teaching may be ordered, in its detail, by the several classes affected. Let our manufacturers and workmen look at the manner in which the German artizans are at once taught and trained. Let them observe what part the technical school plays in the organisation of the great workshops, or rather work-villages. Let them ponder on the great start in the race of life that is thus given to the German workmen; and then, let them not cry ignorantly and supinely to Parliament, but let them set their shoulders to the wheel. The industrial classes of this country are becoming fully aware of the importance of education. They are becoming aware that education is not comprised in the Catechism, the spelling-book, the copy-book, and the multiplication-table. Those masters and employers of labour who will now do their duty in this respect will establish a strong claim to the gratitude of the public. If the proper leaders of the movement fail to organise it, it will be organised without them, and to their lasting detriment.

Point No. 6 is the want of public parks, buildings, and institutions for innocent, instructive, and improving recreation. Here, again, the duty of the Legislature is plain, simple, and unquestionable. It is not now for the first time that we point out what that duty is. It is this,—to ascertain what are the public lands now existing; to secure their enjoyment by the public; to put on record a survey of their details; to render difficult or impossible the alienation of those lands; and to give facilities, if such be needed, for the establishment of such subjects of common right. Not a penny need be asked from the national purse. An English Government is not to be asked to amuse the people. Rigidly let the public robber be restrained. Heavily let the injurer of public health be dealt with. But the criminal part of the question is that alone as to which any tribunal can be called on to interfere. For the rest we must help ourselves. Nor should it be forgotten that in many places wealthy men are making gifts of land to the public for this purpose. Legislation should remove all obstacles to such acts: legislation should make the way easier for the people themselves to obtain what is needed.

No. 7 is, the want of the organisation of the public service for the common good. It is a want, certainly; but can any one for a moment pretend that it is a class want? Is the slow, disjointed, and unsatisfactory working of a machinery which owes most of its awkardness to our English love of liberty—to the fear of arbitrary power,—to the system of co-ordinate check,—a great social wrong pressing upon the working man? It is mere drivel to say so. We fear to commit the management of our army to a soldier, lest he should manage it too well, and, as we think, too arbitrarily. The same fear cripples our navy. The contrast of our regulations, in these respects, with those of the one people that is plainly going ahead in national power, is extreme. The Prussian army is organized to fight and to triumph. It does both. The Prussian navy is organised so that responsibility is direct, well understood, and hampered by no conditions but the good of the service and the performance of orders. Consequently, we hear of no courts-martial on Prussian *Agamemnons* or *Megæras*. With the rapid increase of population in Europe, and its augmenting pressure upon the geographical area, but one of two courses is possible for the future. Nations must be governed,—or not. The intermediate phrase,—the euphemism of their governing themselves,—if not a contradiction in terms, has become each day more and more plainly impossible. Impossible, that is to say, if to be effected by means of talk. Discussion is one thing, administration another. The two are deadly enemies. With every broadening of the basis of representation, the flood of idle chatter is augmented in its fury. Nations seem as though they were tending to the actual decision of all great points by the loudest popular clamour,—as in the Greek assemblies, or as in the warlike concourse of the barbarian tribes that overthrew the Roman Empire. We bear a favourite leader on our shield, and let him guide us wherever fancy impels him.

Our great want is that of patient, earnest, and large-minded men, who will give time to public affairs, and direct that time to the attainment of practical ends, and not to the imagination of organic changes. For such men a wide field is open. Their rewards will be in their own consciences, and in the gratitude of their descendants: not in public applause, or visible honours. The discussion proposed by Mr. Russell may do great service, if it takes this form. But if the result of what is called a social movement, while it is only a social project, be to fix in the minds of the masses the idea that any legislation can redress the now specified evils, or that revolution, whether that of force or that of good-will, would do so by a touch, we have only added one more to the list of the delusions attempted to be foisted on an ill-taught and credulous public.

THE REVIVAL OF ECCLESIASTICAL ARCHITECTURE IN GERMANY AND HOLLAND.*

THE great difficulty which exists of thoroughly understanding the modern architecture of foreign countries arises from the fact that it is next to impossible for any stranger to become well acquainted with the various causes which have influenced the building arts of those lands.

So, in speaking of the two schools of ecclesiastical architecture at present practising in Germany, I shall endeavour, as much as possible, to criticise them from their own stand-point, and not from an English point of view. I shall try to ascertain as well as I can what they are aiming at, and where they have succeeded in attaining the end they were striving after, and where they have failed. At the same time I shall bear in mind the fact that there are certain fixed laws which must never be broken, however styles may change or tastes vary.

Now I think every one will agree with me that the first of these immutable laws is that an architect must be acquainted with the style in which he is working. If, for instance, he is building in one of the Mediæval styles, he must know pretty well what the old men would have done had they had the same wants and requirements to work for that he has. In other words, he must thoroughly understand the spirit of the style which he has taken up. And if an architect is building in a new or eclectic style, he must be thoroughly acquainted with all the elements out of which he is going to compose this style; and those elements will, of course, be the architecture of former times and different countries.

Of the two styles of ecclesiastical architecture at present in use in Germany, I shall speak first of the Eclectic or Munich style, because, by a singular contradiction, the Gothic or Mediæval school is more recent than the Eclectic school. Had the reverse been the case, perhaps the result might have been more happy than it is at present.

Now, after making every allowance for difference of taste, and for circumstances which may have influenced it, I find it impossible to say a single word in favour of the Eclectic-Munich style, the "architecture for the future," as they have pompously named it. I say that it is not an architecture for the future, and simply for this reason: in the first place, it is not architecture at all; and in the second place, men who cannot compose an architecture for the present certainly cannot invent one for the future. Now let us for a moment see what this so-called Eclectic style is. Well it is a chaotic jumble of Romanesque, Third-Pointed Gothic, Italian, pure Greek, Indian, Chinese, Moorish, and Venetian Gothic, all heaped together, without the slightest considerations of necessity or propriety. Take, for example, the New Maximilian and the Maximilian Strasse, at Munich, or the Ludwigs, Kirch, or any other building in the same style, of which, unfortunately, there are thousands; and what do we see? Badly-designed Romanesque windows, utterly devoid of all spirit or feeling, filled in with badly-designed, Third-

* By Mr. H. W. Brewer. Read at the meeting of the Royal Institute of British Architects on the 20th inst. Much information on the same subject, to which the *Builder* first drew particular attention, with views of buildings referred to, will be found in our pages.

Pointed tracery, devoid of all elegance or grace; badly-designed Moorish parapets; badly-designed Venetian-Gothic crockets, crawling like so many fat slugs up meaningless sham gables. Added to this, an outline like two or three cigar-boxes, joined together, with one or two set up on end, all covered with a nearly flat roof, composed of great sprawling tiles, and the building faced with glazed carrot-coloured bricks. It is all very well to call this conglomeration of discordant elements a new and original style; but novelty may be of two kinds. A thing may be new, either because no one *could* have done it before, or because no one *would* have done it before. However, the worst feature of this style is not its artistic past, though that is bad enough, but its faulty construction. I have frequently seen the jambs of a doorway or window 10 ft. or 12 ft. high, all worked out of one piece of stone, only about 10 in. or 12 in. square, and this stone *beam* is set on end, and made to support a Gothic arch, the sides of which will again be composed each of a single stone, with a huge key-stone in the centre.

Then, again, imagine the absurdity of nearly flat tile roofs, in a country like Bavaria, where the snow is often 4 ft. deep, and lies for nine or ten weeks.

I am sorry to say that this style has carried everything before it in Germany. Invented in Munich (and unfortunately not patented), it has been introduced into Berlin, where it has perpetrated dire eccentricities; into Stutgard, Hanover, Dresden, and Carlsruhe, in all of which places it has become a great Court favourite, and has been warmly taken up and pushed by the various *Ayrtons* attached to those Governments. Yes, gentlemen, you are not the only architects in Europe who suffer from Ayrtonism; for, I can assure you, you can form no conception of the extent to which Ayrtonian principles have developed in Germany, especially in Berlin. In fact, the interference of the German Governments, particularly those of Prussia and Bavaria, has had a disastrous effect upon architecture in those countries. I will give you an example of this. When Zwirner died, the inhabitants of Cologne, the "Dom Bau-Verein," and the archbishop, all wished Mr. Stadtz, of Cologne, to be appointed architect to the cathedral. Now, Mr. Stadtz is a Cologne man, and knew every stone of the cathedral,—he had, in fact, worked upon the building as a mason, in order to become better acquainted with his profession, and to have a perfect knowledge of that splendid church. Mr. Stadtz had also greatly distinguished himself by numerous fine churches which he had erected in the archdiocese. But, despite all remonstrances and advice, the great Prussian Ayrton forced upon the clergy and people of Cologne an architect who, of course, was a Berliner, and whose knowledge and feeling for Gothic architecture may be judged by the pimping little terrace, with its pretty little pierced parapet, and its nasty little buttresses, which he has placed as a basement to this noble building, giving it a ridiculous resemblance to an elephant standing on a caterpillar's legs.

I will now leave the Eclectic-Munich style for the present, and speak about the Mediæval school of architects. The first really good Gothic church built in Germany was the work of an Englishman,—I refer to Mr. G. G. Scott's beautiful church at Hamburg. Before the commencement of that building, the Eclectic school and the Italian school of ecclesiastical art divided the field between them; Mr. Scott's church, however, was the commencement of a great reformation in ecclesiastical architecture. The Italian school died out at once, and a new school of Gothic architecture arose. There is, however, one fact which must be noticed, and it is this,—that although the Lutherans made the first move towards the re-introduction of Gothic architecture by the selection of Mr. Scott's plans for St. Nicholas's, Hamburg, they appear to have reaped little, if any, profit from that movement; whereas the Roman Catholics, who were later in the field, have taken great advantage of the good example set them in ecclesiastical architecture by Mr. Scott. As a rule, the new Protestant churches in Germany are built in the Eclectic style, and the new Catholic churches in one or other of the Mediæval styles. There are of course a few exceptions to this rule; for instance, the new Protestant church at Bonn is in a kind of Gothic style, and the new Catholic church at Wiesbaden is in the "Munich-Eclectic" style. With regard to the churches built by "the architects for the future," the first thing that strikes one is their extraordinary similarity. One would imagine that there must be a stereotyped pattern kept at Munich, from which they are all cast. The only difference observable amongst them is, that some of them have pinnacles, and some are without. They nearly all consist of one great fat nave, covered with sprawling tile-roof, an apology for a chancel, in the shape of a little apse stuck on at the east end (of course it is just as often the west end, as orientation is not observed), and a thin tower and spire over a porch at the opposite end. This tower is nearly always gabled on each face, and has a round-headed window and a rose-window on each side; sometimes the rose-window is above the long window, and sometimes the long window is above the rose-window. Iron is largely used for the window tracery and the roofs, and, in fact, wherever it can be used with impropriety and bad effect. Examples of this style of building are the Lutheran churches at Freising, Aschaffenburg, St. Goarhausen, Bingen, Ems, Limburg, Deetz, Landshut, Ludwigshafen, Muhleim, Manz, Donauworth, &c. The new Lutheran church at Wiesbaden is one of the largest examples of a church in this style, and its size and solidity redeem it from the usual vulgarity of these buildings.

When I say that Mr. Scott's church at Hamburg commenced a new era in ecclesiastical architecture in Germany, I do not mean to say that it was by any means the first Gothic church built in Germany during the revival, for two rather interesting examples had preceded it,—the churches at Apollinarisburg, by Zwirner, and at Au, a suburb of Munich, by Oemüller. The former, however, although the detail is pretty, and its decoration sumptuous and splendid in the extreme, is merely a costly toy; and the latter, although one of the most expensive churches ever built, is far from being a satisfactory building; like everything in Munich, it is simply a "specimen," and as such, of course, would never exercise the slightest influence upon the art of the country at large.

If you wish to find the school of real German Gothic architects you must not look for them in the capitals of the various German states. You search for them in vain at Berlin, Munich, Dresden, and Stutgard; but you will find them in the provincial towns,—at Cologne, Aix-la-Chapelle, Paderborn, Hildesheim, Brunswick, Fulda, and Ratisbon, where they have learnt their art in the study of the noble minsters and parish churches of their native towns. Snubbed by the courts and governments, laughed at by their more successful rivals, the "men of the future," as so many antiquaries, and as being 500 years behind the age in which they live, completely shut out from Government work in a country where nearly every great undertaking is in the hands of the Government, they have had to seek for patronage from the town-councils and clergy of their immediate neighbourhood.

Amongst the architects of this school, whose works seem to me to approach nearest in spirit to those of the great Mediæval builders, I will mention the names of Mr. Stadtz, of Cologne; Mr. Guldenpfennig, of Paderborn; Mr. Denzel, of Fulda; Mr. Denzinger, of Ratisbon. There are also two other gentlemen, whose names have unfortunately escaped my memory, whose works are to be seen at Hildesheim and Brunswick; nor must I omit to mention Mr. Kleinertz, of Cologne, whose superb decoration of St. Mary in the Capitol at Cologne, St. Godehard at Hildesheim, and St. Catherine's at Utrecht, are works of the very highest excellence in decorative art. Dr. Boek, of Aix-la-Chapelle, and Dr. Reichensperger, of Cologne, deserve also to be mentioned for their many admirable works upon Gothic architecture and church furniture; and Mr. Baudri, of Cologne, for his attempt to restore stained glass to its proper use and character, in opposition to the gaudy and vulgar transparencies of the Munich school.

The chief works of Mr. Michel Stadtz, of Cologne, are the new cathedral at Lintz, on the Danube, an immense church, 400 ft. long and 200 ft. across the transepts. The nave has double aisles, and the choir, which is of great length, terminates to the east in an apse and chêvet, with radiating chapels. At the west end are an immense tower and spire, 40 ft. in diameter, flanked by a baptistery and a mortuary chapel. The style of the whole is Middle Pointed, and the whole church vaulted in brick, with stone ribs. The work of building this immense church has been going on for some twelve years, and it is still far from completed.

St. Mauritius, at Cologne, is another very large and striking church, about 220 ft. long and 160 ft. across the transepts. It consists of a nave and aisles of seven bays, apsidal transepts, a choir of three bays, terminating in an apse pierced with two tiers of windows, and four apsidal chapels filling up the spaces between the choir and transepts. At the west end is a lofty stone spire, which is the poorest portion of the whole design, and anything but satisfactory in outline. Internally the whole church is vaulted in stone, and the main arches, triforium, and window-jambs are all richly moulded, and of the same material. This church is quite finished, and the windows are being filled with stained glass, which, though wanting in richness, is a wholesome protest against the Munich school. The altars are very simple, consisting merely of stone slabs, supported upon columns with carved capitals. The defects of this church are, firstly, the disagreeable outline of the tower and spire; secondly, the introduction of a badly-designed doorway into the apse of the north transept; and thirdly, the construction of the doorways themselves; for here the architect copied the Munich plan of making the whole jamb out of one piece of stone. There are also keystones to the windows; but as they are kept very small they cease to be objectionable.

Mr. Stadtz's church at Aix-la-Chapelle is similar in general arrangement to that at Cologne, except that here there is no western tower, instead of which there is an open lantern over the crux, and the transepts are square-ended instead of apsidal. The western front is the least successful portion of the whole design, and has a busy and fussy appearance; the arrangement of the gable, too, is far from happy. The interior of the church, however, is very striking; and the high altar, with its metal reredos and shrine, is a good example of modern church furniture. The side altars have painted triptich reredoses of simple design, but still effective.

The church at Muhlhaus is an equally large cruciform church, but is much plainer than the two former ones. It is not vaulted, but has a very simple king-post roof; the effect of the interior at present is rather bald. The spire, which is of slate, is far preferable in outline to that of Mr. Stadtz's Cologne church.

The churches at Kaevlear and Eupen are also large and important churches, but my time will not allow of my describing them, or the very numerous other ecclesiastical works of this talented architect. I must, however, mention his new building, called the "Karlshause," at Aix-la-Chapelle, as a good example of German Domestic Gothic. Like all Mr. Stadtz's work, it is Early Second Pointed.

The works of Mr. Guldenpfennig, of Paderborn, are to my thinking the most satisfactory examples of modern German Gothic that I have seen; and, as Mr. Guldenpfennig is a young man, great things may be expected from him. I am glad to say that he has been appointed diocesan architect to the Bishop of Paderborn, in which capacity he is restoring the fine cathedral of that town in a most skilful and excellent manner; in fact, I have no hesitation in saying that it will, when completed, be the most thoroughly satisfactory restoration in all Germany. I mention this restoration especially because it does not simply consist of restoring what was decayed or defaced, but of replacing features which had been entirely destroyed for many years. I should explain that the cathedral of Paderborn is a noble church, 360 ft. long by about 200 ft. across the transepts, and that the nave and aisles are of the same height, with every bay gabled laterally. Now, not only every one of these gables, but also the gables of the transept and the eastern gable (it is a square-ended church), had been destroyed or modernised about a century ago. Mr. Guldenpfennig has rebuilt all these gables in the same style as the cathedral,—that is to say, the style of the earlier part of the thirteenth century. They are every one of them different in design, and are singularly original and beautiful. The restoration of the interior of this fine church is only just being commenced.

A new school, a college, and several dwelling-houses in Paderborn, by the same architect, are all excellent; one of these houses was so picturesque and spirited that I could hardly have believed it to be the work of a modern German architect: it stands on the old ramparts of the town, and is only one of a number of houses he is building there. All these works are thoroughly local in character, which adds greatly, in my mind, to their interest.

Mr. Guldenpfennig has also erected two remarkably fine churches in the neighbourhood of Paderborn. The first is at a place called Hoerde, and the other at Buderich; both are of brick, and cruciform in plan. The church at Hoerde has a lantern tower crowned by a spire over the junction of the nave and transepts, a nave of six bays, rather shallow transepts, and a well-proportioned chancel. Internally this church is vaulted throughout in brick with stone ribs. Stone is also used for the pillars and arches, while externally it is alone used for the window tracery and coping of the flying buttresses. The church at Buderich has a western tower and spire, flanked by low octagonal turrets (a regular Westphalian feature), a nave of four bays, transepts, and an apsidal choir. The church is immensely solidly built, and is internally lined with stone and vaulted throughout. It is a grave and solemn church, and as unlike the work of a modern German architect as it is possible to conceive. Both of these churches are Second Pointed. A small Romanesque church at Warbourg, and a domestic chapel at Wever for the Baron von Brenken, are equally excellent examples of this gentleman's skill; and the designs for a new church to be erected at Laer, near Oberhausen, and constructed entirely of brick, show great originality and ability. Some farm-buildings and a grange for the Baron von Brenken are singularly picturesque and pretty. Mr. Guldenpfennig does not appear to have done very much work, but what he has done is so excellent, so far above anything else that I have seen in Germany, that I cannot help expressing a hope that the Royal Institute of British Architects will keep an eye upon him, as I feel sure he is destined to do great things in the future.

Mr. Denzinger, of Ratisbon, is best known by his design for the completion of the exquisite cathedral church of that city. This design bids fair to be carried out,—in fact, the two lofty western spires, which form the most important portion of it, are already completed. They are graceful examples of open-work spires, and harmonise well with the magnificent façade to which they form so appropriate a termination. It is to be hoped that the open lantern over the crux of the cathedral will also soon be constructed. I cannot tell how far Mr. Denzinger has been influenced by ancient designs or drawings, but it seems to me that the way in which this octagonal lantern is set on its square base is capable of improvement.

Of the works of Mr. Denzel, of Fulda, I know only one,—the restoration of the Benedictine church in that town. However, there is much that is excellent in this restoration, and there is a greater knowledge of Gothic architecture shown in it than in most German restorations.

I have not yet spoken of the ecclesiastical architects of Austria, and it is scarcely within my province to do so. However, before concluding the few notices I have given of German architects, I should wish to mention the names of Professor Schmidt and H. Ferstel, both of whom have taken an active part in the revival of Gothic architecture in that country.

The Votive Church at Vienna, by Ferstel, was certainly the first Gothic church worthy of the name commenced in the Austrian dominions; and the Lazarist church at Vienna, by Professor Schmidt, is certainly a very satisfactory Gothic church. I cannot help thinking, however, that his churches at Weissgraten and at Fischerhott, near Vienna, are less admirable, although the latter is certainly a clever and a not unsuccessful attempt to design a Gothic church with a dome; and his design for the new town-hall at Vienna is in a mixed style of Gothic and Italian that I venture to think is not an advance in the right direction, although it is vastly superior to anything of the kind that has been done at Munich.

Of course, there are several other Gothic architects in Germany who have done good things, and whose names, either from a want of knowledge of their works, or from want of space, I have been obliged to omit.

But, as a rule, the German architects, with the exception of those I have named, seem like men speaking in a strange language when they attempt to build in the Gothic style. I must now leave Germany, and say a few words about the Dutch revival.

Twenty years ago there was no such thing as ecclesiastical architecture in Holland of any description whatever; both the Protestant and Roman Catholic churches consisted of four walls, with a pepper-box at one end and an altar or reading-desk at the other. In order that you may the more fully understand how the revival was brought about, it is necessary that I should say a few words about the different religious bodies in Holland. By the last census, taken in 1865, religious bodies in Holland were divided as follows:—Protestants of the Geneva Confession, 1,942,387; Roman Catholics, 1,234,486; Remonstrants, about 100,000; Lutherans, about 50,000; Jews, 150,000; and about 8,000 Jansenists, or members of the Church of Utrecht. The clergy of the Dutch Church and the Roman Catholic Church are both allowed an income by the State, and a very small sum is granted yearly to keep the churches in tolerable repair,—that is, to keep them from falling down. Now, about twenty years ago a revival of Gothic architecture commenced amongst the Dutch Roman Catholics, which for enthusiasm, boldness, and liberality has certainly had no equal in Europe. Whether we regard the great number of churches, their completeness, or the important dimensions of many of them, it seems marvellous that they could have been erected by a people numbering little more than one million. Nor has the movement been confined to building new churches only, for nearly all the ancient churches and cathedrals that have remained in the hands of the Roman Catholics have been or are undergoing a thorough restoration. The cathedrals of Maestricht and Roermond are being excellently restored by Mr. Cuypers. St. Catherine's, at Utrecht, originally the Carmelite church, but now the Roman Catholic cathedral, of that city, has undergone a thorough restoration by Mr. Van der Brinck, and has been most beautifully decorated by Mr. Kleinertz, of Cologne, and fitted up with a fine set of carved oak stalls, sedilia, bishop's throne, altar, and pulpit by Engleberger, of Aix-la-Chapelle. The cathedral of Bois-le-Duc, the most magnificent ancient building in Holland, is also undergoing a thorough restoration. This superb church has been not inaptly called the Dutch Cologne, and it bears a remarkable resemblance to its great German prototype. During the last century, however, every window in the church was deprived of its tracery. This is being carefully and well restored. The yellow wash with which the interior of this noble building is bedaubed is also being removed, and I wish this was all I was obliged to say about this well-intentioned, but not altogether judicious restoration, for I think every lover of art, however Gothic may be his sympathies, must regret the removal of the fine Renaissance rood-screen. And the new high altar and bishop's throne are too small and insignificant for this fine cathedral. Then, again, the restoration of the sculpture in the great north front is careless and incorrect. The architects are Messrs. Hesseman & Vennemans, of Bois-le-Duc. The ancient churches of Venloo, Boxtel, Sotard, and Rolduc, and St. Walberg at Arnheim, are being admirably restored by Mr. Cuypers; and, lastly, the beautiful church of Our Lady at Roermond, the finest example of Late Romanesque and Transitional styles in Holland, is being thoroughly restored and completed by Mr. Cuypers. The restoration includes the building of the four towers and spires, which were only carried as high as the roof, or had been destroyed. I should mention that there has been great controversy about the dome of this church. Many persons consider that Mr. Cuypers ought not to have retained it in his restoration. He, however, maintains that the dome is at least as old as the commencement of the sixteenth century, and in all probability was then only a restoration of an earlier one of similar form. I should mention that all the designs for the restoration of this church have received the approbation of M. Viollet-le-Duc. With regard to the works of restoration carried out in the churches belonging to the Dutch Calvinists, little need be said. The church at the Hague has had a cast-iron spire and pinnacles added to its tower, and the whole of its exterior has been neatly plastered. The grand cathedral at Utrecht has had two new galleries in the form of the boxes of a theatre erected in its superb transepts, while its forlorn but graceful choir is still unoccupied. A pretty little doorway which led into the cloisters has been "repaired;" that is, the sculpture has been removed from its tympanum, and its place filled in by a representation in stone of a neatly-bound Bible surrounded by rays. Some Gothic windows of a highly original and purely nineteenth century pattern have been inserted in the sacristies. The great church at Gouda is having its west front neatly restored in stucco. The great church at Rotterdam has been embellished by the addition of plaster quoins. The noble tower of the great church at Breda is being patched up; but the fine lantern over the crossing was destroyed some ten years ago. The beautiful monument of John of Nassau in this church has fortunately been restored by Mr. Cuypers; but the church itself is in a condition that is simply disgraceful. The nave alone is used, and the transepts and choir are allowed to go to ruin their own way. When I was there I saw a clothes-line suspended across the transepts, upon which was displayed the week's washing of the pastor and his family. I remember to have seen the same remarkable display of ecclesiastical vestments in a similar position at Bergem-op-Zoom.

The first really successful new church erected in Holland was Mr. Cuypers's church at Wyck, near Maestricht. It was only commenced some fifteen years ago. It is a fine sample of cruciform church, consisting of a nave and aisles, transepts, and a deep chancel, terminating in a three-sided apse. There is a lofty tower and spire at the west end. The entire length of the building is 163 ft.; width across the transepts, 91 ft.; height of nave, 62 ft. to the vaulting, which is of brick, with stone ribs; height of spire, 221 ft. The whole church has been recently well decorated. The altars, stalls, and other furniture are remarkably good; the same, however, cannot be said for the stained glass, which is not satisfactory.

Of Mr. Cuyper's churches, the most remarkable for completeness and decoration are those of Vechel and Emdhoven.

The church at Vechel consists of a nave and aisles of six bays, transepts, a deep choir, terminating in a chevet, with five radiating chapels, two of which are triangular in plan, the others being all apsidal. The whole church is vaulted in brick, with stone ribs. Brick is also the material used for the walling. The columns are of grey granite. The style chosen is thirteenth century, and the dimensions are as follow:—Entire length, 245 ft.; width of nave and aisles internally, 72 ft.; nave, in the clear, 32 feet; height to vaulting, 72 ft.; height of tower and spire, 268 ft. The church contains eight altars, besides a baptistery and mortuary chapel. The vaulting is supported externally by flying buttresses, and there is an open triforium over the main arcades. Now, the whole of this large church is decorated, not only with arabesques and patterns, but with decorative pictures of the highest excellence. The decoration and pictures were both executed from sketches and cartoons, prepared by Mr. Cuypers and his pupils.

An equally remarkable church is that of Emdhoven, which consists of a nave and aisles of five bays, western towers and spires, transepts, a chancel, with a prettily-arranged chevet, and three apsidal chapels. The length of this church is 237 ft.; width over transepts, 114 ft.; width of nave and aisles internally, 71½ ft.; nave, in the clear, 33 ft.; height of nave to brick vaulting, 71½ ft.; height of spires, 244 ft. The interior of this church is really superb. The whole is a mass of decoration and painting. The portions of the building which are not painted are carried out in buff, not black, brick, arranged in bands and patterns. All the decoration is on a dead-white ground. Below the windows and in the blank spaces above the altars are conventional arcades, filled in with decorative paintings, executed in a very severe style, consisting simply of strongly-drawn outlines filled in with very flat washes of colour, the whole being kept in an exceedingly light key, and entirely devoid of shadow. Bands of white are also used amongst the brick-work, and the general effect of the interior has a kind of opal hue, which is wonderfully charming. Everything in the building is decorated with colour; even the stone altars and the parcloses of the choir, which are amongst the most charming designs for church furniture I have ever seen. All the windows are filled with stained glass, into which a great quantity of pure white glass is introduced. I had no idea, until I saw this church, of the immense value of whitewash in decoration.

Mr. Cuypers's churches at Breda, Oudenbosch, and St. Willibrord, at Amsterdam, are even larger than those I have already mentioned. The church at Breda consists of a nave and double aisles, 100 ft. wide over the whole, transepts, a deep chancel, and three spires. The total length is 216 ft., and the height of the spires 235 ft. It is a much plainer church than those already described, and not so satisfactory in design. The large practical triforium is also a mistake.

The church at Oudenbosch is Romanesque in style, and very plain; it is at present only as high as the clearstory, but promises to be a very striking building. Its dimensions are,—length, 260 ft.; height to ceiling of the nave, which will be flat and boarded, 65 ft.; height to apex of octagon lantern over crossing, 220 ft.; nave, 40 ft. in the clear. This church will offer a magnificent field for coloured decoration, as the windows are very small and there are great unbroken wall-spaces. This church is entirely of brick.

The church of St. Willibrord, at Amsterdam, is only just commenced; when completed it will have five spires, double aisles, transepts, and be over 300 ft. long.

At Sneek another church is now building, which will be 210 ft. long. The churches at Alkmaar, Bodgraven, and Kloderburen, are all large and important buildings.

Mr. Cuypers's churches have at first a singular appearance to an Englishman on account of their excessive nationality; they are very square in composition, very regular, and much more plain externally than such buildings are with us. Then they are all built of brick, with stone very sparingly used; then there is a lightness of construction which strikes an Englishman as being peculiar; but when one comes to examine them and compare them with the ancient Dutch buildings, one is bound to acknowledge their thoughtfulness and thorough common sense. Of course a church built with heavy columns and thick walls would simply sink through the soil in Holland, and the more lightly a building can be constructed and the less material used in its construction, the more durable it is. I am sorry to say that the other Dutch architects who have taken up the Gothic style of architecture have not been so successful in their work as Mr. Cuypers, for although Mr. Weber, of Roermond, has built a very complete church at Maestricht, with a great stone rood-screen, containing two altars in it, a sacramentshaustein, 3 ft. high, a complete set of stalls, and all other ritualistic requirements, it is not on the whole a good church. Mr. Van der Brinck has built many new churches, some of them nearly as large as those already described; but they are rather well-intentioned attempts than successful buildings. Mr. Van Solda has built a vast number of churches: Helmond and Kelemen, for instance, are of great size,—over 200 ft. long,—and have a striking outline, but are ruined by their architect not understanding Gothic detail.

Mr. Margerij, a pupil of Mr. Cuypers, has built a very creditable church at Rotterdam. It is a large cruciform building, but must be considered a copy on a smaller scale of Mr. Cuypers's church at Vechel.

A few examples of the Eclectic school are to be seen in Holland, of which, perhaps, the least objectionable are the Roman Catholic cemetery church and a new Protestant church at Rotterdam. Fortunately, however, the Dutch have set their faces against eclecticism, and the Roman Catholic churches are nearly all built in the Gothic style, while the new Protestant churches which I have seen are in the genuine old conventicle style, or the more objectionable churchwarden's Gothic of eighty years ago.

In this paper I have spoken strongly against eclecticism as practised in Germany; but I do not wish it to be understood that I am speaking against eclecticism in the abstract. Were I to do so, I should be simply raising my voice against the inevitable; for, if architecture is to have a future, and if there is to be a new style, that style must be more or less eclectic. But what I do protest against is, men who, without understanding the architecture of the past or present, attempt to invent an architecture for the future; and I feel convinced that those gentlemen who, for many years past, have laboured so hard to become thoroughly acquainted with the architecture of past ages, are doing far more to found a new style than those who, discarding all the experiences of their ancestors, try to evolve a new style out of their own imaginations. Those who have gone before us have left us three great styles of architecture,—the Greek, the Gothic, and the Renaissance. They are to architecture the primary rays of light. The Gothic, with its golden excellence, is the yellow ray; the Greek, with its pure beauty, is the blue ray; and the Renaissance, with its gorgeous splendour, is the red ray. Time alone can combine these rays and make them daylight in the dawn of a real architecture for the future.

Mr. Street said that he knew little about modern German architects, as he had always found the works of their forefathers so much more interesting, and to his mind there was something repulsive about modern German works. However, he was willing to admit that the works of Mr. Guldenpfennig were singularly good and greatly superior to any other modern work in the same country. He could not help thinking that this, to a great extent, arose from the fact which Mr. Brewer had pointed out; viz., that Mr. Guldenpfennig was a locally-educated man, and had studied in such a good school; for certainly the cathedral at Paderborn was a building which was more free from the usual faults of German architecture than any other church he knew of. Mr. Street also spoke highly of the works of Mr. Cuypers, whom he had always regarded as an architect of great talent and ability combined with that modesty which is one of the signs of a true artist. Sir Digby Wyatt corroborated Mr. Brewer's remarks upon the Munich-Eclectic School. Mr. Waterhouse, Mr. Dawson, Mr. Goldie, and Mr. I'Anson took part in the debate; and the chairman (Mr. Wyatt), in thanking Mr. Brewer for his valuable paper, remarked that it was gratifying to find an amateur expressing such correct views and showing such a thorough knowledge of architecture.

SCHOOLS OF ART AND OF SCIENCE.

Oxford School of Science and Art.—The annual public meeting for the distribution of prizes to the successful science and art students in this school, has been held in the Townhall, Oxford. The Vice-Chancellor, chairman of the committee (Dr. Liddell, dean of Christ Church), presided. The Vice-Chancellor, in the course of his remarks, said that Mr. Ruskin had bestowed 5,000*l.* as an endowment for the master of an Art School for Oxford, which fund he proposed to place in the hands of Dr. Acland and himself to be bestowed hereafter according to rules and under conditions to be drawn up, and he hoped that very shortly this would be brought to bear. If they had a little patience they would find the advantages to be very great, and he hoped to live to see them in full operation. In fact, young persons of the present day had advantages of all kinds in the way of culture of every description which those who, like himself, came into the world a great many years ago, he was sorry to say, knew nothing of. He hoped that those who heard him would endeavour to persuade those who had any taste for these things to take advantage of what was now offered. All had a certain amount of taste. Let them endeavour to apply it—to cultivate the hand and the eye, to learn the beauty of form and colour, and so to elevate their minds and lift themselves to diviner and nobler aspirations than could be afforded by mere sensual and animal enjoyments. Dr. Acland said he never came to that platform to speak in reference to any scientific subject without thinking of the mighty changes which had come over this place in the last twenty-five years. The first time that he appeared in that particular spot, just twenty-five years ago, was to give a scientific lecture; and he was told that if he presumed to mix up the citizens of Oxford and science, he would fail in Oxford as a professional man. Now, he found himself upon the same platform with the vice-chancellor of the university, advocating the same cause. The Rev. R. St. John Tyrwhitt and other speakers followed, and the prizes were distributed. The meeting was largely attended, and great interest was manifested throughout.

Nottingham School of Art.—The annual meeting of the members of this school has been held in the Exchange Hall, the Right Hon. Lord Belper in the chair. Mr. S. D. Walker read the annual report, of which the following is an extract:—

"The honours gained by the students during the past year were quite as satisfactory, if not more so, than in any former year. There was a marked increase in the number of students. In the Government examination held last year, 248 students (201 males and 47 females) presented themselves for examination. They worked 372 papers, of which 69 obtained marks for excellence and Government prizes, and 118 obtained certificates for proficiency,—total, 187 successful papers. The general work of the school had been quite up to the usual standard, and in April last the whole of the year's works were forwarded to London for inspection. There were 220 works sent up in the advanced stages, and 1,303 works in the elementary sections of instruction,—total, 1,527 works. In some of the higher stages of instruction, the works were better than in any former year, owing to some of the students having continued their studies for a sufficient length of time. The honours gained by the 'National Art Competition' this year have been very satisfactory, and as regards the gold medal awards, the results have been greater than in any previous year. The Nottingham school is now the only provincial school of art in the United Kingdom that has gained gold medal awards for five consecutive years. The two gold medals for this year were obtained for designs for lace curtains, by William Butler, a draughtsman of Messrs. Heymann & Alexander's, and by G. F. Turton, a draughtsman of Messrs. Ward & Cope's. He was glad to say that the above firms were manufacturing curtains from the gold-medal designs of their respective draughtsmen. The remaining national awards were obtained for flower drawing from native designs in colours, and for wall decorations, relief designs, architectural drawing, and designs for lace. The school has obtained twenty free 'Art Studentships,' which admit the holders to all the classes of the school for one year free of charge. It has also obtained thirty-three Government prizes. Advanced works by the students were selected by the Government examiners for the public exhibition of the national competition at South Kensington Museum."

The head-master, Mr. Rawle, gave the following comparative table in course of his report:—

Name of School.	No. of Students.	Gold Medals.	Silver Medals.	Bronze Medals.	Queen's Prizes.	Total Award.
Nottingham ...	409	2	...	3	8	13
Edinburgh ...	684	2	1	3	3	9
Glasgow.....	1,164	1	1	3	3	8
Manchester ...	390	...	3	6	4	13
Birmingham ...	1,108	...	...	4	5	9
Dublin	533	...	...	2	3	5
Sheffield.....	258	...	...	...	2	2
Newcastle-on-Tyne	390	...	...	1	1	2
Leeds (two schools)	360	...	...	...	1	1
Liverpool	1,101	...	...	...	...	0
National Art School (Kensington Museum)	895	2	6	13	16	37

Mr. Walker said from various schools of art to which he would refer, they would see that the Nottingham school did not receive due support. In the Nottingham school there were 503 students, and the annual subscriptions were 150*l.*, which was equal to 6*s.* per head. Burslem, 203 scholars, 210*l.* subscriptions, or 20*s.* per head; Cork, 240 students, 200*l.* subscriptions, or 17*s.* per head; Dudley, 85 students, 167*l.* subscriptions, or 40*s.* per head; Hanley, 155 students, 154*l.* subscriptions, or 20*s.* per head. Considering the importance of the school of art to Nottingham, he calculated that the annual subscriptions, instead of being 150*l.*, ought to be 500*l.*, in proportion to the other towns he had quoted.

OPENING OF THE NEW WING, STOCKPORT INFIRMARY.

THE new wing recently added at the south end of the Stockport Infirmary, expressly for infectious and contagious diseases, has been opened.

The design and plans were prepared by Mr. Allen, of this town; and the contract for the work was let to Mr. W. H. Brown, also of this town. The first stone was laid by Mr. Sykes on the 23rd of June, 1870. The work was completed within the specified time, but other alterations and improvements being needed, the opening was deferred until the entire institution had been put into thorough working order.

The wards of the new wing are completely isolated from the old building, from which they are approached by a covered passage leading from the principal corridor. On the ground-floor, facing Wellington-road, are the day and sleeping rooms of the male convalescents, the latter providing accommodation for four beds. The rooms are large, airy, and cheerful; and contain all the fittings usually to be found in such wards. All the beds are of iron, fitted with a stand for medicine, &c., and over each is suspended a simple contrivance, by means of which weak patients may raise themselves in bed. On the same floor, at the corner of the building, are the female convalescent wards, fitted up with three beds. In the nurse's kitchen are a kitchen range, hoist, cupboards, well filled with crockery shelves, sinkstone, with hot and cold water, and every convenience; and opposite is the nurse's bedroom. This apartment being situated in the centre of the group of rooms on the ground-floor, the nurse will at all times be within call.

At the back of the building, overlooking Francis-street, is the women's small-pox ward, 20 ft. by 14 ft., and containing four beds. Both this and the floor above are well supplied with baths, lavatories, &c. Two flights of steps lead to the upper story. Over the women's small-

pox ward, in a room of nearly the same dimensions, is the men's small-pox ward, in which are the same number of beds. Two windows on each side furnish ample light, and, when open, will give a thorough current of air. At the corner of the building, over the female convalescent wards, is the women's fever ward, containing eight beds, and measuring 26 ft. by 22 ft. It is lofty, and lighted by four windows. The men's fever-ward, three windows in length at the front of the building, and an equal number at the back, measures 24 ft. by 20 ft., and in it are eight beds. All the walls are plastered.

The old building has now a hoist, manufactured by Messrs. Wren & Hodgkinson, of Manchester, whereby patients with broken limbs or heavy weights of any kind can be raised or lowered. The erection of this and the porter's lodge, &c., were let under a second contract to Messrs. Meadows, of Heaton Norris.

THE FALL OF A NEW FACTORY NEAR STOCKPORT.

THE inquest on the bricksetter, killed by the fall of the Heaviley Mill at Stockport, has been held before Mr. Johnson, coroner. The evidence was voluminous and somewhat technical. Several solicitors attended to protect the various interests involved. The questions raised were whether the accident had originated with the premature removal of the centres from one of the arches, or the imperfect position of the skewbacks, the feet of which acted upon the feet of the arches and let them down.

Mr. John Whitaker, the Stockport surveyor, who had been directed by the coroner to make a professional examination of the mill, was one of the witnesses called. He said the new mill had been erected on the old portion, the latter being two stories high, and built at the same time as the old mill. Upon this old part two additional stories have been built, making it four stories. The bricks used in the new erection are very fair in quality; they are seconds and chequers. The mortar is also good, and the brickwork is fairly set. The quality of the iron also seems fair. The strength and proportion of the principal beams appear to be right. The mill is 100 ft. 6 in. long. Taking the south side of the mill the width is 48 ft. 9 in.; there are three rows of pillars 10 ft. apart from centre to centre. The beams are 1 ft. 8 in. deep in the centre; from the bottom flange, 10 ft. by 2½ ft.; from the top flange, 5 ft. by 1½ ft.; web, 1¼ in. thick. They were placed along the length of the building. The beams on the northerly side had a 24-ft. bearing, and the remainder about 18 ft. On the easterly side there are counter beams, placed transversely from the other beams, and going into the east gable wall. The beams to which these were attached were not stronger or of different pattern to the other beams. At the other end,—the old gable,—the beams were tied to skewbacks, placed longitudinally against the easterly gable of the old mill, and from the flanges of these skewbacks the arches were sprung. The skewback was 10½ in. deep on right plate, except where the rods were; there they were 18 in. deep. The upright was fully 1 in. thick, the face of the sole plate or flange was 4½ in. wide, and under the plate 1¼ in. thick. There was no back flange to the skewbacks; but there are a few at the south end which are not disturbed. A space of 4½ in., or half a brick, had been cut out of the old mill to receive the skewbacks; they had not been fastened or screwed to the old wall, and from 2 in. to 3 in. of space was left behind them ungrouted to the old wall. The tie-rods were placed at the top of the skewbacks, about 16 in. from the bottom flange. Four of them were in the long bay and three in each of the others. The rods were fastened, as usual, with cotters at the top of the skewbacks. In consequence of the sole-plate not sitting against the old wall, they were not, in his opinion, able to resist the pressure of the arch. They "canted," or came forward, the top being held fast, whilst the bottom went into the cavity towards the old gable wall. The effect of that upon the arches would be to cause them to sink in the crown, thereby weakening the arch and rendering them unsafe. Three of the 14 ft. lengths would become deflected from this cause. The arches were necessarily taken out, and the centres put under again. There was a 14-ft. length taken out of the arch on the north side to prevent its falling at once; they had not keyed it; but the skewbacks were pushed back by lengthening the rods, before they commenced building up the sides. The adjoining beam, from his information, had not been stayed while these operations of rebuilding were going on. It consequently broke laterally, pulling down the arch next to the east end, the other injuries following which are now apparent. These beams were calculated to bear a vertical pressure of 18½ tons, supposing the weight was equally distributed over it; but laterally it would not sustain six tons' pressure. There would be about six tons from both pressures upon this beam when it broke. It would be likely to break with a lateral pressure of six tons, supposing it was not stayed at the gable end. Had it been stayed, it would have been converted into a vertical pressure. I think the tie-rods were too high up; consequently gave but little strength. The lower they were placed, the more strength they would give to the building. It was an element of weakness to fasten them at the top. There was no reason why counter-beams should not have been let into the wall. Had there been no space behind these skewbacks, there would have been less liability to an accident of this kind. The fastening of the skewbacks into the old wall in the lower stories makes them more firm. There is no reason why that plan should not have been adopted in the new building. [Evidence was volunteered that such was the case in the old mill, and that the skewbacks had back flanges.] The cause of the accident is the injudicious way in which the skewbacks had been formed and placed, being without back flanges, and not being placed close up to the wall. The 14 ft. of brickwork (11 cwt.) which had been taken from other arches, and placed upon this fallen arch, would be hardly 3¼ tons, taking each brick with mortar at 7 lb. Had that weight been equally distributed, the lateral strain would be only about 1 ton; and the vertical pressure about half that. The gable end of the wall has gone out—but not 6 in. The cause had been a thrust or lateral strain from the old gable towards the east end, affecting, in fact, the whole fabric.

On the part of Mr. Barlow, the contractor, another witness named Ralph Littler, who was employed as a brick-setter at the new mill, at the time of the accident, was called. He said, while standing on the new wall on the top story, he heard a crack, and, looking downwards, saw a beam breaking about a yard from the end near the pillar. Saw the place in the wall cut to receive the skewbacks before the accident, and saw the skewbacks after they had been fitted in. The bottom of them would be about 1½ in. from the back of the old wall.

At the conclusion of the evidence, the Coroner proceeded to address the jury, and to review the evidence given. In doing so he said they would now dismiss from their minds any imputation of criminal neglect to any person. It was quite clear by the evidence that the centres of the arches having been removed, they had given way while the skewbacks were being replaced. The question which suggested itself was whether, in the contradictory evidence, there was a vacuum behind the skewbacks instead of being close up to the back wall, according to the opinion of Mr. Whitaker. It would appear that that did not touch the wall by 2½ in.; the consequence of this would be that they had been forced inwards, canting outwards at the top or head, thus, through the tie-rods depressing and deflecting the arches, which were then unsupported or without stays, and had such a lateral strain upon the adjoining beam that it broke, and the melancholy results followed, including the death of this unfortunate man. They had heard the opinion of Mr. Whitaker, a scientific witness, that the fastening of the tie-rods to the top of the skewbacks was rather an element of weakness than one of strength. He thought such a conclusion was obvious to all. No doubt to some extent, that lateral pressure, to which he had alluded, was accelerated by the vertical weight of the loose materials placed on the top of the arch which had fallen, and which no doubt disturbed to some extent the equilibrium of that part of the structure, being at the time insufficiently stayed. Had transverse beams to the wall been adopted, this accident could not have happened. It was certainly to be regretted that works of this magnitude and importance to human life should have been left to parties either incompetent or incapable to look after their safe execution; for, it could not be disguised that had this mill been completed upon the principle it was intended to be, and filled with people to work the machinery, the first vibratory motion imparted to it would have had the effect of bringing the whole fabric to the ground, and perhaps destroying the lives of all who might be in it. In the present case there does not appear to have been anybody on the ground to look after the building—no clerk of the works, or, in all human probability this inquiry would not have been necessary. He would not discuss the advisability or otherwise of these skewbacks, but his own view of the subject was, they were a fatal mistake. It was not difficult to foresee that this accident might give rise to some litigation. With that the jury had nothing to do—they did not even offer any opinion upon that point. The only real question for their consideration, was to ascertain the cause of the death of John McDermott; and whether the beam did or did not break in consequence of the insufficient staying of the arch while being taken down and rebuilt, for that was admittedly the cause of the accidental falling of the mill.

The jury, acquitting all parties of criminal neglect, confined themselves to the simple verdict—that the death of the deceased had been caused by the accidental breaking of one of the iron beams, which had been insufficiently stayed while the adjoining wall of the arch was being rebuilt, and which fell owing to some lateral pressure and strain.

A BACKWARD STEP IN BIRMINGHAM.

THE Corporation of Birmingham has published notices for a new sanitary Bill for that town, which, if passed into an Act with clauses as suggested, will be reversing sanitary progress as established in most of our large towns. Sewers, in old days, were only used for surface waters and overflows from cesspools; fines were levied if these sewers were appropriated for water-closets. In London about 700,000 water-closets now empty their contents into the drains and sewers. At Leamington, a not distant neighbour of Birmingham, some 10,000 water-closets are drained by the sewers; and so of most sewered towns. Sewers and drains are, in fact, made for the special purpose of draining houses and all other premises within their area. This is the true work and duty of town sewers and house drains; and as the cost of main sewers is defrayed out of the rates, all rated persons have an undoubted right to the fullest use of the sewers they have been made liable for: householders and manufacturers both have vested interests in the sewers they have paid for, and if they tamely suffer the Sewers Committee of the Town Council to enact the following clauses they will deserve to suffer the penalty:—

"To prohibit persons from making new communications with the sewers and drains of the Corporation without their consent, and to empower the Corporation to demand and take rates or payments in consideration of such consent, and to make other provision in relation thereto.

To prohibit persons within the borough from discharging or allowing to pass into the sewers or drains of the Corporation any sewage, filth, filthy water, or refuse from slaughter-houses, cattle markets, urinals, cow-houses, and stables, or any refuse from the works of German-silver manufacturers, galvanizers, wire-drawers, and manufacturing chemists, and other works, or any other sewage, filth, filthy water, or refuse, described in the Bill, and to vary or extinguish all rights and privileges now enjoyed by any person in respect of the matters aforesaid.

To authorise the Corporation to levy a special rate or charge upon the owners and occupiers, or owners or occupiers, or any of them respectively, of houses, factories, works, lands, and hereditaments within the borough having a water-closet or privy, or water-closets or privies, in communication with the sewers or drains of the Corporation, and to make provision for the recovery and application of such rate or charge."

It must not be assumed that the members of the corporation of Birmingham are unanimous as to the advisability of such clauses being enacted. The fact is, the old working committee was in favour of the most complete and perfect system of sewerage, drainage, and sewage irrigation; but a new talking committee has talked the working committee out, and themselves in. This committee has compiled an able report, but has managed to read it backwards. It has collected facts, and adopts a theory directly the contrary. Well, the book is a fact creditable to its industry. The deductions from it are fallacies so transparent that we should have thought a child might have more readily seen the true conclusions. The committee is, however, an example of the old distich, that

> "He that complies against his will
> Is of his own opinion still."

We are sorry for Birmingham, and yet the blundering attempts of this committee which has caused these notices to be given, are so monstrous that we feel satisfied the ratepayers will veto them sooner or later.

ART STUDY IN AMERICA.

THE Americans are taking up the whole art question, both as to education and galleries, with their usual energy. They seem to understand the question of organisation in educational matters perfectly, and it is surprising how, at very little cost, a subject of study can be introduced into every class-room in a city, and the necessary instruction given to every teacher for its adoption. In the city of Boston, with a population of 250,000, when once the law is passed to include drawing as a subject to be taught to every child who goes to school, it forthwith arranges that the teachers, about 1,000 in number, all adults, shall at once be taught the subject themselves. And at present, without any difficulty or confusion, or sacrifice of the children's school-time, all the teachers are receiving lessons in drawing at the normal school, by the public instructors under the direction of Mr. Walter Smith. The verbal and practical lessons thus conveyed, at once find their way into every class-room in the city. They only now need text-books of the highest class to have drawing taught as systematically as all the other subjects of education. Then there will be a constituency for the schools of art, and the evening drawing classes, prepared to go to them by choice, and with all the rough work of beginning got over. Mr. Walter Smith, as State Director of Art Education, has to co-operate in carrying out the law that in every city of above 10,000 inhabitants, free evening drawing-classes shall be established. This it is hoped will be done during the coming winter. They want good examples and skilled teachers: the opportunity and desire appear to exist.

THE NEW KEIGHLEY WATERWORKS.

THE new and enlarged water supply system has made some progress in construction. The reservoirs are two in number. There is one at Ponden, and another at the Water Sheddles. The one at Ponden is called the "Compensation Reservoir," and is constructed for the purpose of supplying water to the manufacturers in compensation for the streams which feed their mills, but which will soon be taken from them and diverted to and concentrated in the reservoir at Water Sheddles, on the Lancashire hills. This second reservoir will be devoted entirely as a store for the supply of the inhabitants of Keighley with water for domestic purposes.

The Ponden reservoir is situated in a gully or ravine at the junction of two valleys. The reservoir is supplied by nature with embankments on all sides but one. The trench at Ponden is upwards of 200 yards in length, and 16 ft. wide, and a depth has been reached at one point of 63 ft., the average depth along the whole trench being 59 ft. At present there are fifty men employed upon it, and since April two engines have been kept going night and day, pumping the water from the bottom. The total number of men engaged on the work is 150. A number of men are engaged in piercing a hill-side in search of clay, which has been found. When the foundation is obtained along the trench, then the work of puddling will begin. The entire area of ground which the reservoir

will occupy will be about forty-eight acres. It will be about 65 ft. deep at the deepest part, with an average depth of 50 ft., and will accommodate 210,000,000 gallons of water. To provide for floods and the consequent excess of water, a bye-wash will be constructed, and will form part of the mason work of the embankment. It will be 220 yards long, and 120 yards of it have already been constructed. The shoulder of the hill on the east side has been scooped for a considerable distance down the proposed route of the bye-wash, but in consequence of the sandy nature of the soil and the repeated landslips which have occurred, it has been found necessary to construct stone props. By this bye-wash, the surplus water will be carried down into the river Worth.

The Water Sheddles reservoir, which is rather more than a mile distant from Ponden, was commenced about the middle of August. It lies in a valley resembling in several features that of Ponden, and is fed on all sides by rivulets formed by a combination of springs. An embankment of somewhat less dimensions than the one at Ponden will be required, and when the puddling is commenced at Ponden, the sinking of the trench here will be at once begun. About thirty men are engaged upon it in clearing a bye-wash and in making preliminary arrangements. When the puddling in the Ponden reservoir is advanced a stage, the number of men at the Sheddles will be considerably increased. This reservoir—the "domestic" one—is estimated to hold 180,000,000 gallons of water, which will be conveyed as a feeder to the existing reservoirs by seven miles of pipes, three miles and a half of which will be 15-in. and three miles and a half 12-in. pipes.

The cost of the works is estimated at about 46,000*l.*—25,000*l.* for the Ponden works and 21,000*l.*, for those at the Water Sheddles. The Messrs. Bailey are the contractors.

THE SEWAGE QUESTION.

King's Norton.—At a recent meeting of the Board of Guardians of King's Norton, Mr. Holmes, architect of the new workhouse, reported that in accordance with a request of the Board he had, in company with Mr. Wilmott, surveyor to the Balsall-heath Board of Health, visited Stoke workhouse at Newcastle, Staffordshire, to inspect the process of dealing with the sewage of the workhouse, carried on by the Peat Engineering and Sewage Filtering Company, and of which we have already spoken. The raw sewage was dirty, dark-coloured, and of an offensive odour. After passing through different tanks, which Mr. Holmes described, the liquid matter was discharged quite clear. The apparent effect of the process was to remove all suspended matter and offensive odour. A sample of the water had been analysed by Mr. Wrightson, who stated that the sewage was not completely defecated, though it was to a considerable extent, and as much under the circumstances as he could have expected. The defecation might, no doubt, be rendered more complete by an additional filtering tank; but he considered that in its present state, though it was undesirable that it should find its way into wells, there could be no objection to its influx into any stream or river, as it would under no circumstances be unpleasant or inimical to animal life in a running river. He had examined a number of shallow well-waters in Birmingham during the last twenty years, and had often found them to exhibit more distinct traces of sewage contamination than the sample taken at Stoke workhouse. In case the Board should be inclined to give the system a trial he should have to submit the plans for the tanks to Mr. Weare's company, and to confer further with them as to obtaining the patent right, for which a nominal charge per annum would be made. The principal profit of the company appeared to be derived from the sale of peat charcoal, and, in the case of Stoke workhouse, the conversion of the solid sewage matter into manure. They mixed it with soot and other ingredients, and sold it for 4*l.* per ton. In its prepared state it was sold in bags, and when handled no offensive smell was perceived. In its coarse state, before it had undergone Mr. Weare's process, the deodorised solid matter was valued at 30*s.* per ton, and as the guardians would have some eight acres of land under cultivation, the manure might with advantage be partially applied to the ground. The cost of charcoal delivered in Birmingham, Mr. Weare said, would be about 35*s.* per ton. The nominal royalty for the use of the patent would be 10*l.* per annum, and would include three journeys of inspection annually. The cost of the tank and apparatus would involve an additional outlay of several hundred pounds; but Mr. Holmes could not at the present time tell the precise amount. Mr. Holmes's report was ordered to be printed and circulated among the members, the consideration of it being deferred.

Experiments by disinterested persons ought to be made with peat itself, uncharred. If peat, in the lapse of time, become coal, the process must be analogous to slow charring, and it may be a question whether uncharred peat be not already changed enough, except on the living surface, to form a cheap and sufficient substitute for all the purposes supposed to be effected by peat charcoal on sewage. We recollect being spoken to, about a quarter of a century ago, by a Mr. Scott, from Fifeshire, in Scotland, as to the defecation of the metropolitan sewage by compressed peat, which he urged was capable of absorbing and utilising the valuable ingredients of sewage. If peat could be so used instead of peat charcoal, it would be an economical advantage of great importance where such processes are regarded as the best way to dispose of sewage.

COMPETITION PLANS FOR GATESHEAD SCHOOL BUILDINGS.

The School Designs Committee reported to the Board that they had made the following selection:—

"Group No. 1.—Plan No. 14, Thomas Oliver, Newcastle; No. 19, John Sidebotham, Southport; Nos. 21 to 24, G. H. Thomas, Liverpool; Nos. 25 and 26, John Johnstone, Newcastle; Nos. 39 to 44, Ross & Lamb, Darlington. Group No. 2.—Plan No. 41, Thomas Oliver; Nos. 55 and 56, John Johnstone; No. 72, Perkins & Sons, Leeds; No. 86, E. A. Heffer, Liverpool; Nos. 96 to 99, Parsons & Ellwood, Newcastle. Group No. 3.—Plans 120 and 121, T. T. Smith, London; No. 129, Thomas Oliver; Nos. 131 to 133, Ross & Lamb; No. 134, E. A. Heffer; Nos. 137 to 139, John Johnstone; Nos. 143 and 144, Matthew Thompson, Newcastle; Nos. 145 to 147, A. E. Gough & Hudden, London. Group No. 4.—Plans Nos. 149 and 150, John Johnstone; No. 155, Thomas Oliver; Nos. 169 to 171, T. T. Smith. Group No. 5.—Plans Nos. 25 and 26, John Johnstone; No. 196, Thomas Oliver; No. 200, Henman, Alexander, & Henman, Stockton; No. 201, Perkin & Sons; Nos. 204 and 205, Ross & Lamb; Nos. 220 to 225, Robert Fairbairn. Under the terms of competition the School Board are not bound to accept or adopt any design, but if a design for any group should be adopted by the Board it is intended to employ the architect of the adopted design as architect for that particular group."

From these they had afterwards selected for adoption,—

"Group No. 1, plan No. 14, Thomas Oliver; group No. 2, plan No. 48, Thomas Oliver; group No. 3, plans Nos. 131 to 133, Ross & Lamb; group No. 4, plan No. 155, Thomas Oliver; and group No. 5, plan No. 196, Thomas Oliver."

The recommendation was unanimously adopted.

NEW MARKETS AT NEWTON ABBOT, DEVON.

These markets, which are now approaching completion, from the designs of Mr. John Chudleigh, jun., of the same town, will be opened in a few weeks.

They are built in two blocks, with elevations in the Italian style, separated by a road 30 ft. wide. The smaller block, which consists of a hall, 105 ft. by 55 ft., intended solely as a vegetable market, with a covered shed on one side, 100 ft. by 15 ft., for the unloading of carts, has for some months past given temporary accommodation to the butchers' and pannier market, pending the erection of the larger building, which stands on the site of the old markets. Adjoining the vegetable-market on the east side is the fish-market, necessarily of a triangular shape, covered with a flat roof having in it a lantern-light.

The western entrance to the larger building is through a clock-turret, 57 ft. high, having rooms for the toll collector, &c., on each side, to the corn exchange, 60 ft. by 40 ft., 25 ft. high to springing of roof, which is open, having hammer-beam principals with circular laminated ribs, and ornamental iron spandrels. All the roofs are boarded on the purlins, and have a space for air between the boarding and slates, open at the eaves and ventilated at the ridge. The corn exchange is ventilated by means of its windows and two dormer ventilators on either side of the roof. It is intended to be used also as an assembly-room, and has retiring-rooms on each side. Moulded cornices, architraves, &c., add to the internal appearance of the room.

The main hall has seven entrances, is 161 ft. in extreme length, and 77 ft. in extreme width, divided by iron columns into nave and aisles, the former 43 ft. to the ridge. The roofs have wooden principals and purlins, and iron ties and brackets. This hall will be used as the butchers', pannier, and general markets. There is an annex on the northern side for the carcass market.

A tower at the south-east corner of the building, 65 ft. high, designed to contain a supply of water for the use of the market, refreshment-rooms, &c., is omitted from lack of funds, and gives this corner of the building rather an unfinished look on the outside. The walls are built of the very good local limestone, with Bath stone sparingly introduced in a few dressings and cornices.

The buildings have been erected by the local Board, under the superintendence of their surveyor, Mr. J. S. Stevens, at a cost of about 6,000*l.*; Messrs. Harvey & Son, of Torquay, being the contractors.

The design of Mr. Chudleigh was selected in open competition.

REPORT TO BOARD OF WORKS FOR WESTMINSTER DISTRICT.

The fifteenth annual report of the proceedings of this Board has been printed. The district Board and their surveyor, Mr. Arntz, deserve some praise for having undertaken and carried out with success a somewhat hazardous but very important work during the late epidemic of smallpox. This was the establishment of an hospital, besides the pauper one at St. Ermin's-hill, for all persons, such as mechanics and others engaged in the building and other trades, who were well able to contribute to their own restoration to health, but wanted proper accommodation for isolation and attendance during the progress of the disease. Mr. Holt, the medical officer of health, who also interested himself in the project, thus speaks of it in his report:—

"Those premises that would have suited, the owners declined to let, and those they might have had were too confined for the purpose; they were, therefore, compelled to fall back upon their own houses in Milbank-street, which, with the active assistance of Mr. Arntz, your surveyor, were speedily converted so as to be available for the emergency: and in this temporary building there were admitted forty-six patients, thirty-nine of whom recovered, and seven died. Every precaution was taken to prevent the spread of the disease, by not only disinfecting the bedding, clothing, &c., of those who were admitted as in-patients, but also in those who were attacked in their own homes."

The Board alludes, with thanks, to offers of a site for a separate hospital of this order made by Sir William Tite, as chairman of the Westminster Improvements Commission, on liberal terms; by Archbishop Manning, without rent or condition of any kind; and by her Majesty's First Commissioner of Works, also without conditions. As the case was urgent, however, the Board at once turned houses of their own into an hospital.

GAS EXPLOSION AT LEEDS GAS-WORKS.

An alarming and fatal explosion at the Leeds gas-works draws attention once more to the dangers, real and imaginary, connected with the manufacture and use of gas. It is stated that the disaster at Leeds has caused considerable excitement, as similar gas-works exist in two other districts of the town, both of which are densely populated. But gas, as we have often shown, is not dangerous until it escapes. So long as it remains in the receptacles and pipes prepared for its reception, it is safe enough from explosion. But when it escapes and mixes with the atmosphere, we get a mixture which is not merely combustible, but more or less explosive. Its principal effort is to ascend, and if there be no roof or other obstruction to hinder it, the stream flows away upward, losing itself, as it were, in the atmosphere, and thereby disposing of the danger. A gasholder standing in the open air is scarcely so perilous as an ordinary stack of timber; but if a body of gas escape from a point situated within a building the case is widely different. At Leeds the escape occurred in one of the purifying houses, and there accumulated until it flowed out at one end through an archway, and became ignited by contact with the furnaces of the boiler-house. The gas being mixed with air at once exploded with a terrific noise, killing one man on the spot and injuring several others. The roof of the building was completely destroyed, and other damage was done, while the whole neighbourhood was panic-

stricken by the uproar and the concussion. A rent 10 ft. long was made in one of the gas-holders, but was temporarily stopped with clay, which prevented ignition, although the town engines had to do battle with a fire which seized the purifying-houses, and which raged for some time.

HOW TO HEAT A SMALL CONSERVATORY FREE OF COST.

A FEW years ago a friend of mine bought a house, one of a row; it contained two sitting-rooms on the ground floor,—one to the front, the other to the back. In summer the back room was unfit for habitation, owing to the heat caused by a close range in the wall which separated it from the kitchen of the adjoining house.

This suggested to me an idea which has been carried out successfully. In planning a new villa, I placed the kitchen fireplace in the west gable; the space behind the range was left open, and against this was built a conservatory, 14 ft. by 8 ft. The open space behind the range is furnished with a wooden door, over which, in the thickness of the wall, is formed an air-flue, having a damper. By shutting the door and opening the damper, the heat from the range is carried off, and *vice versâ*.

This contrivance may not suit those who wish to maintain a high state of temperature in the conservatory during the winter, but a heat sufficient to protect plants from frost and to cause some varieties to flower during that season, can be maintained *free of cost*. S.

THE ANTIQUARIAN RESEARCHES IN ARGYLESHIRE.

THE excavations lately carried on at Ach-na-Goul, near Inverary, at the request of the Marquis of Lorne, have led to some curious and interesting results. A huge cairn was opened to the extent of 70 ft., when several chambers, formed of megalithic blocks of grantoid rock, were cleared and closely inspected for incisions. One incised block of granite was identified as a part of one of the chambers; another of schistose rock (actynolite) was found in the immediate neighbourhood. The incisions seem to identify the structure with those near Loch-gilpead, which are surrounded with incised stones, many of which have been discovered by the Rev. Mr. Mapleton, M.A. (Oxon), of Duntroon Castle, Argyleshire, and are similar also to those of Northumberland and Ilkley.

The principal chamber was covered by an immense block, apparently worked in a pent-house fashion, for discharging the rain from the structure; and in it were discovered distinct evidences of cremation, charcoal, burned bones, fragments of incinerary pottery, and a vitrified mass of mica-schist and trap rock similar to that of the Vitrified Forts of Scotland, giving evidence of intense heat. Here also was discovered a block of white quartz of a conical form, like others discovered by Mr. Phené, the first of them at Letcombe Castle in June last. It surmounted a kist or reliquary containing human bones, pottery, weapons, &c. Mr. Layard, we may here note, found small cones in thousands at Warka (we think it was) in connexion with the slipper-shaped coffins of that ancient eastern "city of the dead." The cone found at Ach-na-Goul is now at Inverary Castle.

Continuing the excavations southward from the covered chamber, a long passage or gallery was opened midway, in which was another chamber 9 ft. long, to the east of which was a chamber 5 ft. square, approached by a narrow opening from the gallery. The whole length of the gallery and chambers (exclusive of the last), to the distance of 70 ft., contained remains of cremative operations, but the eastern chamber was entirely free from any such appearance. Mr. Phené thinks that as it is well known that ceremonies of a dark and pagan ritual were conducted in secret constructions of this description, both in connexion with the rights of sepulture, and also as symbolical of funereal and other ceremonial, even when there was no actual burial, the indications given by the existence of the eastern chamber and the symbolical altar point strongly to this structure having been one of those places ["sorcery halls"] connected with the mysteries of Paganism. It is said to be remarkable that the saurian-shaped mound lately described, is separated from the structure we are now describing by a district abounding with legends of mythical monsters of so classic a kind that they seem to rival the Greek story of the garden of the Hesperides,—Loch Awe and Loch Avich each claiming its peculiar monster.

Mr. Phené's researches, then, appear to be so far corroborative of the idea of our correspondent, Mr. J. E. Dove, that such structures had something to do with those magical rites which constituted the universal religion in pre-Jewish and pre-Christian times.

BAUXIT AND FIRE-CLAY.

ACCORDING to Richter's researches, the power of sustaining intense heat is greatly dependent on the amount of alumina contained in fire-bricks compared with their contents of other ingredients. A substance has been recently discovered in Krain, which promises to become a very useful one in the manufacture of these bricks. It is a species of what the Germans call "bauxit," and Dr. H. Schwarz,* who has experimented on the subject, says that two parts of calcined Wocheinit (for this species of bauxit is found at Wocheina), pulverised and mixed with one or two parts of fresh clay, gave the best results. It is stated that large crucibles, with their walls made of this substance, were exposed to the greatest heat of a regenerative glass furnace for several days, and that they remained unchanged, neither melting nor softening taking place.

If this news should prove correct, the wocheinit would be valuable on account of its very large percentage of alumina, which would enable the manufacturer of fire-bricks to increase the contents of that ingredient in his clay almost *ad libitum*; for while the ordinary fire-clay contains hardly 30 per cent. on an average, this wocheinit contains 50 per cent. of alumina.

On comparing the exact figures, this will become still more apparent:—

	Chinese Kaoline.	Stourbridge Fire-clay.	Pipe-Clay.	Wocheinit.
Alumina ...	33·7	23·1	32·0	50·82
Silica	50·5	64·1	53·7	11·28
Water	11·2	10·0	12·1	24·20
Ferric oxide	1·8	1·8	1·4	1·60
Lime	—	—	0·4	Traces
Magnesia ...	0 8	0·9	—	do.
Potash, soda	1·9	—	—	do.

The 1·60 per cent. of oxide of iron in the wocheinit might lead some to suppose that its influence might be detrimental, in so far as it might act as a flux; and so it does, but its action is never very potent unless accompanied by a large percentage of silica, which is not the case here.

The wocheinit, then, may be expected to be of some use in the manufacture of bricks, tiles, &c., where indifference to the influence of heat is important.

NEW HALL AND OFFICES OF THE POPLAR DISTRICT BOARD OF WORKS.

THIS new building, which has been lately opened, has been erected to provide accommodation for the meetings of the fifty members of the Board elected from the parishes of Poplar, Bromley, and Bow, and for the various executive offices of the Board. It is situated in High-street, Poplar, at the corner of Woodstock-road; a position which, by reason of the narrowness of those thoroughfares, is hardly worthy of the structure.

The octagonal corner tower serves the purpose of an entrance-hall leading to the corridors and principal staircase, and connects harmoniously the more lofty portion of the building, containing the large hall, with the smaller frontage, containing smaller and consequently less lofty rooms. The upper portion of this tower is used as a waiting-room for contractors and others having business with the Board. On the first floor of the right-hand wing is the Board-room, 63 ft. long, 37 ft. wide, and 24 ft. high, with a gallery for 100 persons at one end, having a separate entrance and staircase. This room has been made somewhat in excess of the actual requirements of the Board so as to be available for public meetings of the ratepayers. The other parts of the structure contain offices for the clerk, surveyor, clerks of works, medical officers, and sanitary inspectors. There are also a gas-testing room and apartments for the housekeeper.

The external materials are malm brick and Portland stone, with polished granite shafts to the entrance-door and Board-room windows. The dome is covered with Vieille Montagne malleable zinc, fixed in the French manner. The cost, exclusive of site, is 7,500*l*. Messrs. Hills & Fletcher and Messrs. Arthur & C. Harston are the joint architects.

* "Polytechnic Journal," Band. 198, p. 156.

THE NEW YORK CITY POST-OFFICE.

THE New York City Post-office, and United States Courts, from the designs of the supervising architect of the Treasury, Mr. A. B. Mullett, occupy the triangular space of ground purchased by the United States Government from the City of New York, forming the southern extremity of the Old Park, at the intersection of the Broadway and Park-row.

The building has a frontage of nearly 280 ft. on the Park, and 222 ft. on the Broadway and Park-row; it is withdrawn from the point of the triangle towards the Battery far enough to give room for a façade of 130 ft., from the centre of which is thrown forward a massive pavilion with a projecting portico, which makes the extreme length of the building on the Broadway and Park-row 290 ft. The view is south-west, showing the pavilion and the façade on Broadway, which is the same as on Park-row. The main cornice is 70 ft. above the side walk; the corner pavilions are 102 ft.; the centre pavilions on the Broadway and Park-row are 109 ft.; the domed roof of the south-west front is 123 ft.; and the whole height to the foot of the flagstaff on the cupola, 165 ft.; the longest façade is that on the Park with a pavilion 87 ft. broad crowned by a high octagonal dome, which is shown in our illustration.

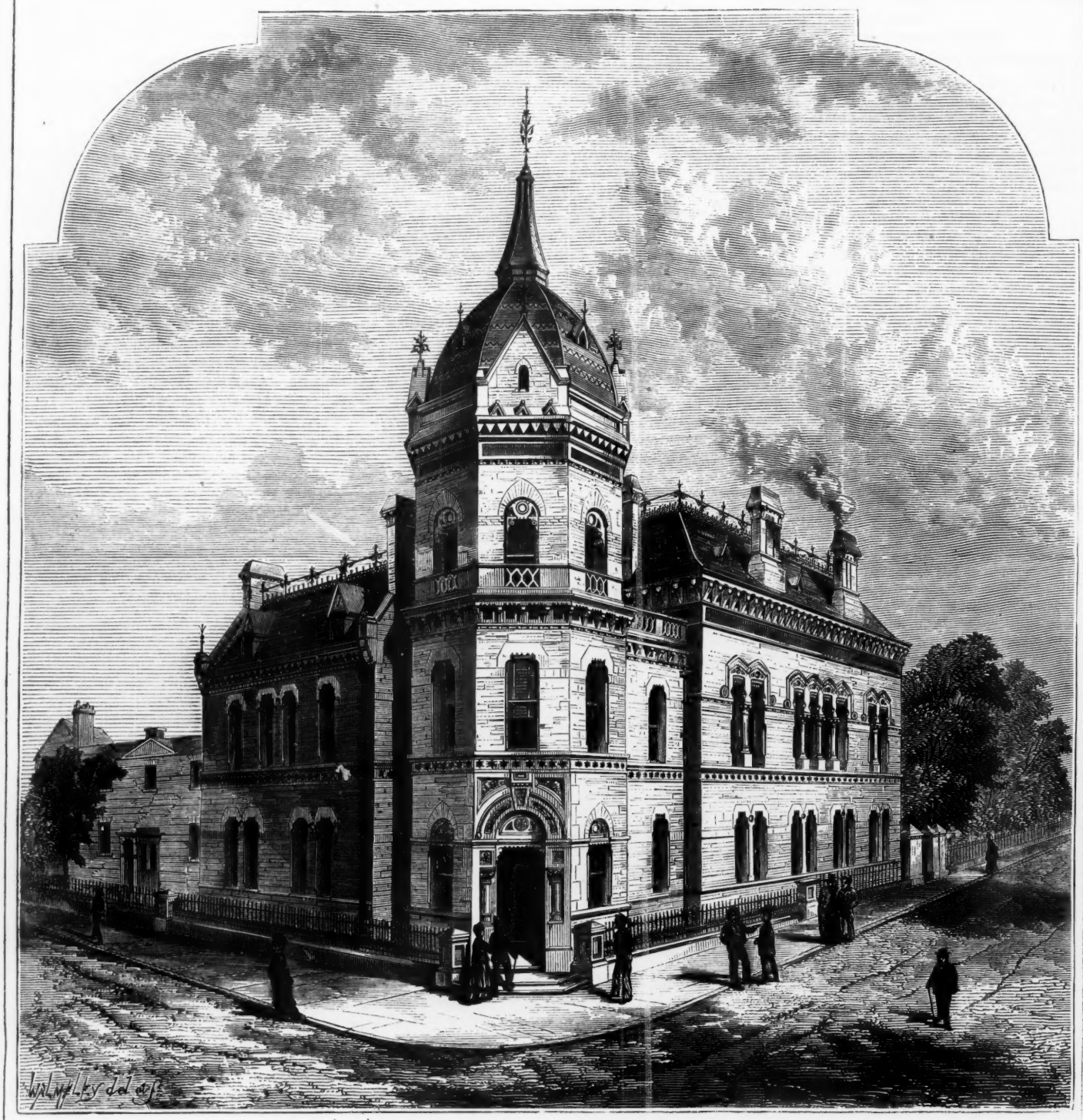
The soil being sandy, it was necessary in laying the foundations to put in concrete beds of 4 ft. in thickness, and massive piers of granite 30 ft. below the surface. The material of the exterior is the Dix Island white marble, the same as used in the Treasury buildings, Washington: the partitions will be brick, the floors of brick, and iron beams throughout, the roof and staircases of iron. A roadway, 25 ft. wide, will be reserved on the north of the building for the use of the mail wagons, which will receive and deliver the mails under an ornamental glazed projecting roof, and the roadway will have gates at the ends enclosing a triangular court about the main story, giving light and air to the inner rooms.

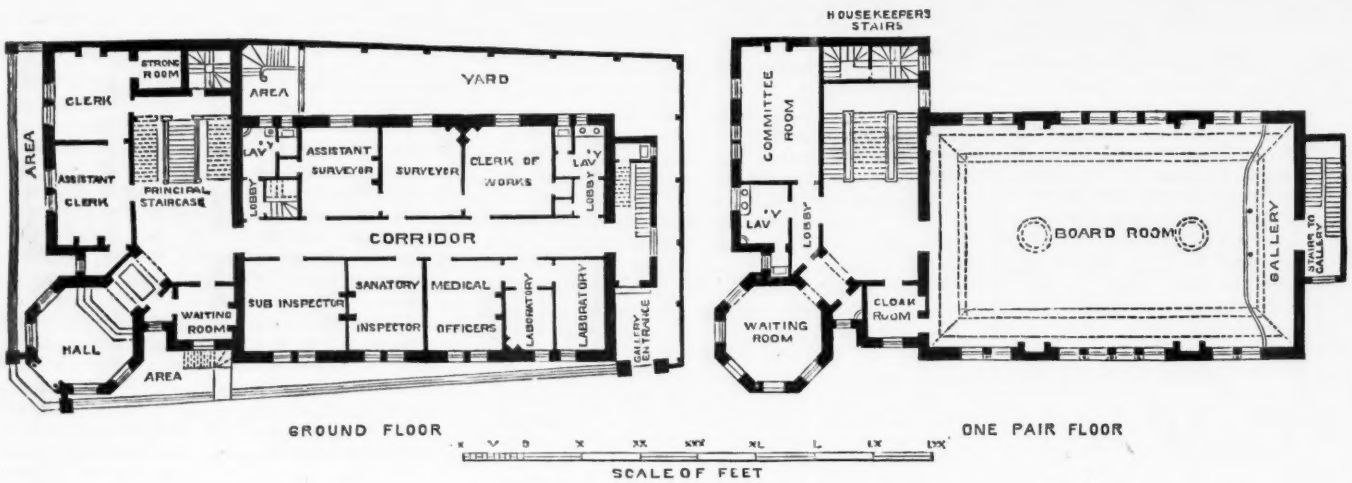
The whole of the ground floor will be devoted to the Post-office. The public corridor, 15 ft. wide, is on the Broadway and Park-row; while the Park is reserved for the mails. The principal entrance is south-east, under the portico, and in the central pavilion in the Broadway and Park-row, having fifteen points of access to the corridor. The whole of the interior will be roofed with glass and iron; at the top of the first story it is thrown into one large room; the partitions and walls of the courtyard being carried by iron columns, which serve for ventilating flues, and connect with large shafts built at each angle of the court, containing the smoke flues from the engine and boilers. Over the public corridor, which occupies only half the height of the principal story, is a mezzanine or half story; this opens to the post-office room, guarded by a balustrade, forming a gallery to it 30 ft. high. The lofty windows of the first story admit a flood of light and air in hot weather to the interior of the great room through the gallery.

Beneath are the basement and sub-basement, carried out under the side walks, and lighted by illuminated tiles in the pavement: the basement will be devoted to the making up of the mails and the heavy work of the office; the sub-basement will be used for engine, boilers, storage of coals, and other bulky articles.

In the second and third stories the whole Park front will be for the United States Courts and their dependencies. Three large court-rooms are provided, two of which continue up two stories; and around are the various offices for the judges, juries, clerks, attorneys, and the records of the courts. These rooms are reached by two large elliptical staircases in the pavilion of the front they occupy. The principal staircase will be the south-west front, which also gives access to the building. The interior communication is provided for by the corridors making the circuit of the building; in the upper stories with staircases at convenient points, with elevators from story to story; while the ventilators have been carefully planned with appliances of upward shafts opening above the roof.

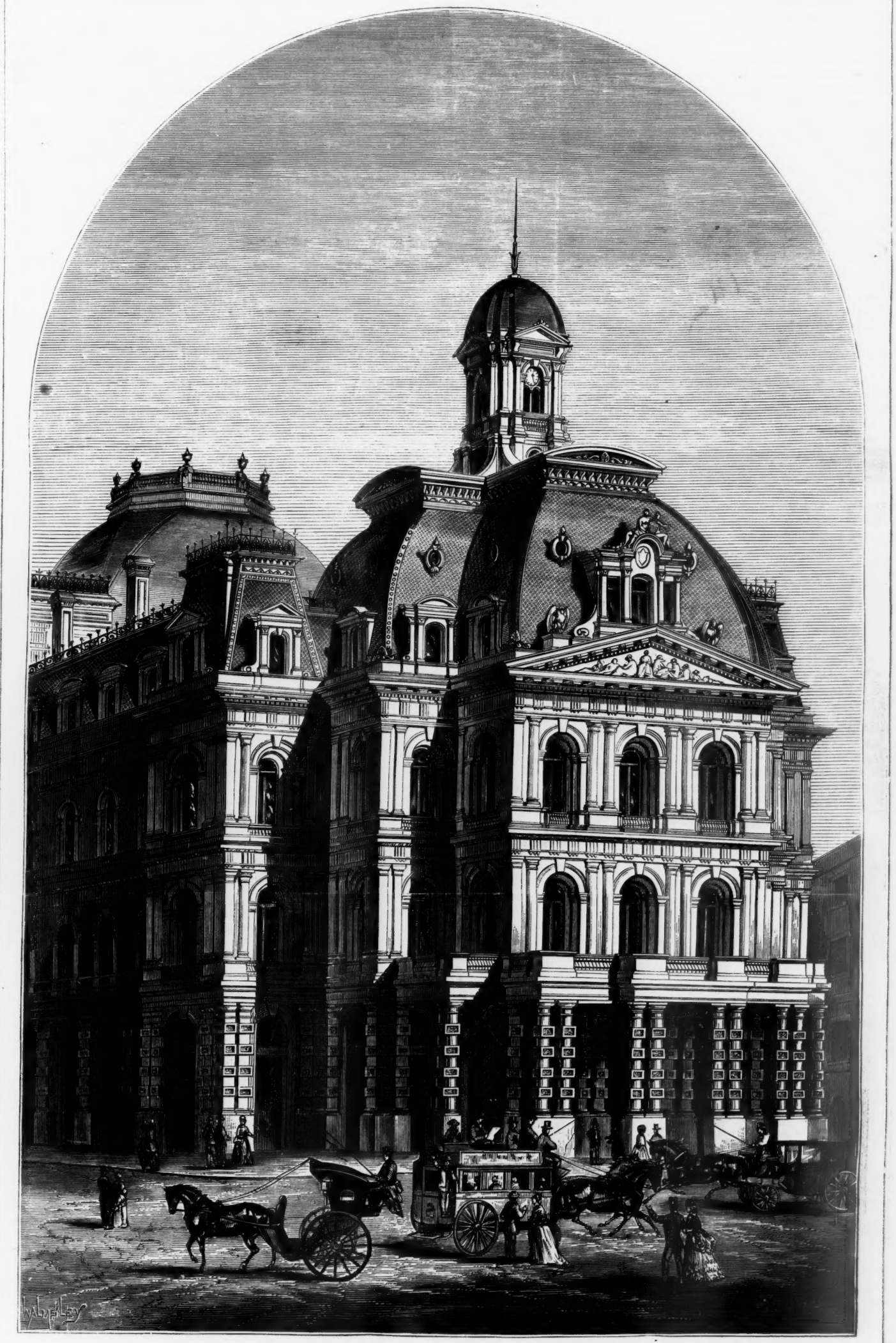
The whole, when completed, is estimated to cost about 1,000,000*l*. sterling.





HALL AND OFFICES OF THE POPLAR BOARD OF WORKS.

MESSRS. HILLS & FLETCHER, AND MESSRS. A. & C. HARSTON, JOINT ARCHITECTS.



NEW YORK CITY POST-OFFICE, U.S.——Mr. A. B. Mullett, Architect.

BRADFORD GRAMMAR SCHOOL COMPETITION.

Out of the plans for the proposed new Grammar-school, furnished by the nine architects who had been invited to compete for the premiums, the governors have agreed to accept the plans of Messrs. Andrews & Pepper, provided all the conditions which they imposed can be carried out. The style of architecture of the design of Messrs. Andrews & Pepper is Perpendicular Gothic. The second premium of 25*l.* was awarded to Mr. George Ogden, architect, Exchange-passage; and the plans which took the third, of 15*l.*, were by Messrs. Healey. Amongst the other architects who competed were Messrs. Lockwood & Mawson, Messrs. Milnes & France, and Mr. S. Jackson.

THE METROPOLITAN SEWERS OF DEPOSIT.

It is to be hoped that action will follow my suggestion in the *Builder* for improving the metropolitan sewers. From my experiments and long experience as a sewer-engineer, I am certain that my proposal is really the right one to be adopted. The work, however, should not be done piecemeal, but upon a well-organised scheme. The plan would supersede flushing, because it would prevent deposit; and if carried out in all the sewers of deposit in the metropolis, an ultimate saving would be effected of 20,000*l.* per annum. Twenty-four years ago I pointed out to the authorities that all sewers of deposit could be made self-cleansing by simply putting smooth narrow channels along their bottoms at adjusted levels, and leading the drains into these channels. But as flushing was then considered the only remedy for the evil, my proposal was pooh-poohed and shelved. Since that time more than 500,000*l.* have been spent in flushing these sewers, and they are in no better condition now than they were then, and will be in no better condition in the year 1900 than they are now, after another half-million shall have been similarly expended on them. This half-milllon, if laid out as proposed, would make all of them self-cleansing, and the work could be done in three or four years. Now the question is, "Will the Local Boards and Vestries continue the never-ending and perpetually expensive process of flushing, or will they adopt a plan which would not only make their sewers of deposit self-cleansing, but improve the public health, and save the rate-payers' money?"

Recently, about one mile of the metropolitan sewers of deposit has been made self-cleansing. The sewers, where the experiment has been carried out, varied from 2 ft. 6 in. to 3 ft. 6 in. in width, and from 3 ft. 6 in. to 4 ft. 6 in. in height. The bottoms were flat, the sides vertical, and the crowns semicircular. There were shafts of access, called "manholes," about 150 ft. apart, which were covered under the paving with granite or Yorkshire stone kerbing. At parts the fall was good, at others there was no fall at all, and at other places the fall was the wrong way. It may be inferred that while only rain and waste waters were admitted into these sewers the deposit, which consisted chiefly of surface *débris*, was not particularly offensive; but when night-soil was allowed to enter them, the slops and refuse waters discharged with it spread over the wide flat bottoms, and became so weak as to be incapable of removing it. Hence its deposited and other noxious gases, escaping through the gullies, sinks, and closets, poisoned the stratum of air breathed by the people. Until about twenty years ago the deposit was removed by hoisting it through the manholes to the surface, and carting it away, but since that time it has been washed away by flushing. Now, however, the ordinary drainage from the houses, by running in the new narrow channels, sweeps the sewage matters before it, and keeps the channels perfectly clear. Scores of miles of sewers of the above description, which were put down during the reigns of Charles II., James II., William and Mary, Anne, and George I. and II., are still in existence. Some of these are cleansed by flushing, and some in the old way by hand-labour and cartage. Now, I have no hesitation in saying,—indeed, I am certain,—that if the bottoms of these sewers were to be similarly altered, they also would be self-cleansing. It has been lately shown in the *Builder* how the sewers of deposit, of the old Westminster shape, could be made self-cleansing, and the same could be done with the sewers in the Finsbury and Tower Hamlets districts. But it is in the Surrey and Kent districts that the sewers are in the worst condition, especially in Walworth, Newington, Camberwell, and Bermondsey. If cholera should unfortunately break out,—well, it is to be hoped that it will not make its appearance. The alteration of the sewer bottoms as I have proposed would be equivalent to increasing the present water supply three or four fold; that is, to pouring three or four times the present quantity of water into the existing flat-bottomed sewers.

J. P.

THE IMPROVEMENT OF LEEDS.

I am delighted to see you have been hammering and clinching nails I have often struck at Leeds. If I had been there it would have been a rare treat to me to hear the address you gave, and see the effect. You might, remembering the abuse the *Builder* got years ago for writing on the Leeds sanitary matters, and the bullying all the sanitary reformers have got since in the town, have exclaimed to the Leeds people, "Oh, Jerusalem, Jerusalem, that killest the prophets!" and if you had spelt it *profits*, and shown them conclusively the process of the murder, then, and then only, would you have been listened to.

I have heard men in prominent positions in that town, when shameful cases of neglect and lawlessness have been pointed out to them, simply say "Where there's muck there's money;" and if you take one away you take both. Better have both than neither."

An Old Sanitarian.

THE GAS QUESTION.—THE NEW SYSTEM.

Complaints have long been rife as to the high price and low quality of the gas supplied to the inhabitants of London, and every session of Parliament has Gas Bills under consideration, either in the interests of the gas companies or of the consumers, or of both. It is seriously discreditable that "the examiner" for the City of London should have to report concerning impurities such a fluctuation in the sulphur present in gas as from the minimum of 13·28 grains to 34·69 grains in the 100 cubic feet; that he has to report the presence of ammonia; and that he has to give such a low average illuminating power of the gas burned as 15·68 sperm candles; Manchester gas being above 22 candles illuminating power, and sold at a much lower price, namely, 3s. per 1,000 cubic feet of cannel gas. Walsall has its supply at 2s. 2d. per 1,000; Birmingham, at 2s. 6d.; and such a remote locality as Plymouth pays only 2s. 6d. per 1,000.

It cannot be doubted that in every successive year this gas question will press more clamorously for settlement. That this must be so is evident from the rate at which consumption is increasing. The population, and inferentially the size, of London has increased 13 per cent. from 1861 to 1871, as against an increase of 12 per cent. for the preceding decade. It may be supposed that the consumption of gas has gone on in a correspondingly increasing ratio. In 1866 the consumption of gas in London was 8,500 million cubic feet. It is found that the consumption is nearly doubled every nine years, and that at the past rate of increase it will reach to 15,417 millions of cubic feet in 1874; in 1886, to 34,334 millions of cubic feet; and in 1893, to 91,667 millions of cubic feet! How such an enormous quantity is to be distributed will, when that time comes, be a knotty problem for the engineers of the day. In the meantime, it must be evident that if a better and an innocuous light can be supplied, at a lower cost, and from a smaller quantity of gas than is now consumed, such new light bust be a great boon to the public. A Paris firm profess to be able to confer this boon in their patented oxy-hydric gas, exhibited, as we mentioned in our number for November 11th, at the Crystal Palace.

It is well known that the products of combustion from our ordinary gas are pernicious to health and destructive to elegant bookbindings and books, and to delicate fabrics or decorations in the apartments or buildings, into which they are discharged.

Oxygen, the supporter of all combustion, is abstracted from the atmosphere by burning gas, and in proportion to the extent of the abstraction the air is vitiated for respiration. MM. de Can and Dietz are proposing to introduce into London a system of lighting that was extensively in use in Paris before the war, and that has been in use for some years in Brussels, Vienna, New York, and other cities, and by which Buffalo, in the United States, is entirely lighted.

The patentees do not propose to interfere with the hydrogen gas at present in use or its manufacture. Their method of consuming it is, instead of leaving the flame to draw its diluted oxygen from the atmosphere, in which it exists in a proportion of about one to four, to supply pure oxygen, wherewithal to feed the flame, and secure a better light from a much smaller quantity of common gas, and the complete combustion of what is burned. The oxygen is pumped from the atmosphere by a steam-engine, and passed, in a heated state, into retorts, charged for about three parts with manganate of soda. This substance has the property of absorbing oxygen, but surrenders it again to a supply of heated steam. From the retorts in which this process is carried on, saturation of the manganate with oxygen and its absorption by steam alternately, the nitrogen of the atmospheric air, for which the manganate has no affinity, is carried off by waste-pipes. The hot steam, with its charge of oxygen, is passed from the retorts to a condenser, in which the steam is condensed, and the liberated oxygen passes on to the gas-holders, ready for use. The manganate does not waste in the process, but simply plays the part of an everlasting sponge. The oxygen is conveyed to the burners by a separate service of pipes, and the two gases are not brought into contact until they pass out of the jet.

The burners of the oxy-hydric gas are of different kinds. In one a jet of oxygen in the centre has a jet of inflammable hydro-carbonic gas on each side. In another, the jet of oxygen is surrounded by a ring of hydro-carbonic jets. The result of the combination is a brilliant colourless flame, of great illuminating power, of much lower temperature than the hydro-carbonic gas.

It is stated that the oxygen can be purified and separated on a large scale at as low a cost as coal-gas. It can also be supplied in a portable form in a state of compression, the highest degree of compression employed being from eleven to thirteen atmospheres.

It was stated that the measure of light as ascertained by the photometer was equal from 1·00 ft. of common hydrogen gas, and from ·20 of common gas and ·152 of oxygen supplied with it; or, in another form, that the same light could be obtained from 200 ft. of common gas and 152 ft. of oxygen that is obtained from 1,000 ft. of common gas. It was further stated that the practical result, apart, we presume, from the question of pipes and fittings, was, that by the use of the oxy-hydric gas double the light could be obtained at the same cost as for common gas, or the same light at half the price.

THEATRICAL.

Manchester.—At the Theatre Royal, Miss Ellen Faucit has been turning the heads of the Manchester people with a short series of representations, including, of course, *Rosalind*, in which Miss Faucit remains without a rival. The *Guardian*, in the course of a critical eulogy, writes of another of her personations on this occasion:—

"After what we have said, it will be unnecessary for us to give words to our conviction that Miss Faucit's *Juliet* is not only one of the very finest of her artistic creations, but one of the finest of artistic creations known to the stage of the present day. We have preferred on this occasion to suggest what seems to us some of the peculiar difficulties of this character, and to dwell upon Miss Faucit's success in overcoming them. In the 'Lady of Lyons' her admirers will have another opportunity of listening to her perfect elocution and watching the beauty of her gestures, the very mannerisms of which we are weak enough not to desire to miss. But only those who have seen her *Juliet* can form a conception of her highest efforts in romantic tragedy. The rich exuberance of Shakspeare's 'Romeo and Juliet' is proved to be something different from extravagance when the test of such acting as Miss Helen Faucit's is applied to it."

Victoria Palace (London).—The new interior which is being erected, under this title, within the old Victoria Theatre, is making satisfactory progress, from the designs of Mr. Robinson. Mr. Snowden is the builder. It is intended to accommodate a very large number of persons, and will be opened at Christmas.

The Philharmonic.—The managers of the theatres interfered to prevent the proprietor of the Philharmonic Music-hall from approximating to things dramatic; so he applied to the Lord Chamberlain, and obtained his licence, and this house is now enrolled in the list of theatres. Situated in the far northern district, Islington, it is almost startling to find one of the best of

Offenbach's *bouffe* operas being done with lavish expenditure and much musical ability to a crowded *salon* every night; yet so it is. Indeed, it is not too much to say that this presentation of "Geneviève de Brabant" is equal to anything in its way that has been done by an English company.

The Surrey.—We are not bound to denounce anything that is badly done; but when we find the very good dramatic critic of the *Observer*, amongst others, pointing out the excellence of a scene of the Cathedral Close, in "Edwin Drood," it is time some one should suggest discretion in praise. The scene would be a discredit to strollers in a barn. The bits of props intended to represent flying buttresses, and the way in which the roof is painted so that it is made to look as if it were an attic story above the parapet, assist in producing a whole which is simply atrocious. Mr. Julian Hicks ought to know better. Mr. Henry Neville's acting, in one scene of the drama, is excellent.

Antwerp.—A new theatre has been completed in Antwerp. The ceiling has been painted by Leneven, a member of the Belgian Institute, and is said to be very noteworthy.

Rome is to have, this time next year, in addition to the many theatres that city already possesses, a new one, and that the largest of all, which is to be built by the architect, Signor Morini, who in less than six months erected the Principe Umberto Theatre of Florence.

THE DARIEN CANAL.

SIR,—In your valuable publication the question of the proposed ship canal through the "Isthmus of Panama" is brought under the notice of your readers; and, with your permission, I beg to submit certain facts in connexion with the undertaking that may prove interesting.

In the report on "Interoceanic Canal and Railroads between the Atlantic and Pacific Oceans," published in 1867, in compliance with the resolution of the American Government, Rear-Admiral C. H. Davis sets forth *nineteen* different projects for canals, and *eight* projects for railway communications. Independently of these there remains a project on which considerable money has been spent by the "Société Civile du Darien," which has been passed in silence.

Rear-Admiral Davis writes in reply from Washington, on the 11th of March, 1870:—"I had the pleasure to receive your letter of January 27th in due course of mail, and have deferred answering it until I could get possession of the Journal and Reports of 'La Société Civile' on the Darien Canal. These publications, including the 'Journal de Voyage,' December, 1864, have been to-day placed in my hands for the first time. I sincerely regret that they were not in my possession when I prepared the last edition of my report."

The plans, sections, estimates, &c., together with the original concession, have been inspected by several of our most eminent engineers, and the work reported on by the "Ponts et Chaussées" of France. These various documents are open to inspection should any one feel desirous of satisfying himself of the facts here advanced.

There existed prior to 1859 a "Société d'Étude," whose object was to study the question of interoceanic communication between the Atlantic and Pacific oceans.

The Columbian Government, on the 6th of May, 1859, passed a law for the purpose of and to facilitate the establishment of a canal from the Gulf of St. Miguel to Caledonia Bay.

The Columbian Government on the 28th of May, 1859, passed a law, by which Sig. M. de Francisco Martin was appointed Plenipotentiary Minister, specially delegated to "solicit demands in France and England, to treat, negotiate, and conclude for the acceptance of the concession in accordance with the stipulations set forth in the law of the 6th of May, 1859," and which law is the *de facto* concession.

M. de Francisco Martin, on his arrival in France, caused advertisements to be inserted in the *Moniteur Officiel* on the 14th and 20th of July. After negotiations the concession was signed on the 10th of December, 1860; the only modification being that the confederation should receive five instead of three per cent. of the profits.

By the 46th clause, any modification is to be submitted and approved by the President of the Confederation. Beyond that before stated, no alterations were made; the *law* was accepted as *the concession*; time for the completion of the various stipulations being computed from the date of the *official notification* that the duly signed concession had been received by the Columbian Government. The deeds were executed in duplicate, and forwarded by different channels. Acknowledgment of their reception has been made, but the Government has not yet sent the official notification.

In accordance with the 42nd clause, 40,000 francs were deposited on signing, and the surveys on which 70,000 francs were to be expended were commenced.

The Société d'Étude sent out engineers and staff for the preliminary survey. They left Southampton on board the *Shannon* on the 2nd of February, 1860. In accordance with the concession, the engineers and staff left Southampton on the 15th of February, 1861, on board the *Tasmania*. They reached their destination, and landed on the 10th of March, completed the surveys by the 25th of June, and arrived in Paris on the 20th of July, having spent considerably more than the 70,000 francs stipulated, which fact is acknowledged by M. de F. Martin.

The plans and estimates were submitted to the Ponts et Chaussées for their approval, as to their being in accordance with the stipulations of the concession, and on the report they were finally accepted by M. de Francisco Martin, and the Société Civile du Darien duly constituted.

All documents were from time to time forwarded in duplicate to the President of the Confederation. Owing to the continual political changes, their receptions have not been regularly acknowledged; nor can any further step be taken till the official notification, as within twelve months from that date the caution money has to be deposited, the Government electing either of the three modes in which the deposit shall be made,—as a *deposit* likely to be forfeited; as a *loan* at interest made to the Government; as a *payment* in anticipation of profits.

The Société Civile du Darien, *two years after the signing of the concession*,—that is, on the 8th of February, 1862,—took the opinion of M. Marie, Ancien Batonnier et Ancien Ministre des Travaux Public; M. A. Cremieux, Ancien Ministre de la Justice; M. Mathieu Jenard, Ancien Ministre de l'Intérieur, Ancien Président de l'Assemblée Constituante; who gave it as their opinion, that whatever may have taken place, "*the concession is valid, and essentially obligatory on both contracting parties.*" As a further test (if any were necessary), the Société obtained in the Tribunal de la Seine, Cour Temporale de Paris, *fourteen verdicts* against shareholders who declined to pay their calls on the alleged grounds that the Société's rights in the concession had lapsed.

These facts speak for themselves. The Société Civile du Darien have completed to the letter the obligations imposed upon them by the concession; as further acknowledged in a letter of M. de F. Martin, dated the 12th February, 1862, in which he says,—"Until the official notification of the reception of the concession has been made, the periods mentioned in the different articles of the concession cannot be computed. This applies to the formation of the definitive company as well as the other stipulations contained."

The Société Civile du Darien may take for their motto, "Watch and wait" the proceedings and pleasure of the Columbian Government.

EDWARD L. PARAIRE,
Consignee of the Concession of the Société Civile du Darien.

DELAY IN REPAIRING A CONDUIT.

IN the case, Webster *v.* Corporation of Halifax, before Vice-Chancellor Malins, judgment has been given by the Vice-Chancellor, who began by stating that this litigation was of a most unfortunate description, and might have been avoided by a little forbearance on both sides. By a deed of 1856, the corporation, for a very small consideration (35*l.* only), obtained 1,350 square yards of land, and also the right to work, use, and repair a conduit through the rest of the plaintiffs' land, 4 ft. high and 4 ft. wide inside, and 6 ft. outside; and if necessary to reconstruct it, provided that "it do not exceed the dimensions before mentioned;" they paying for damage done to the land. The corporation were bound to do as little damage as possible, and also to make compensation for what damage they did. This conduit was to be water-tight, and not an interruption of the water which Mr. Webster had in his land west of the conduit to the brewery. In 1862 the corporation repaired and altered (if not enlarged) the conduit. And in 1870 they called in scientific men to inspect it, who reported that it was not water-tight, and required reconstruction. In March, this year, the work was commenced; and on the 9th of May, this bill was filed, because it was found that the work had been so done as to interrupt the flow of Mr. Webster's water to the brewery. It was not attempted to contradict this statement, and the question was whether, in the nature of things, there was any occasion for this even for a single day. On this subject there was very contradictory evidence. The case which charged the corporation with stealing this water at the rate of 100,000 gallons a day, and selling it at 6*d.* per 1,000, making a profit of 50*s.* per day, entirely failed; however pertinacious the agents of the corporation had been in asserting their rights. Still he could not conceive that any engineer of ordinary skill could not within two months have constructed a conduit like this, not exceeding 200 yards long, 4 ft. high by 3 ft. 1 in. in width inside, with walls 1 ft. 9 in. thick on each side, which should be perfectly water-tight, and yet not intercept a drop of water of the plaintiffs. He could not say that the plaintiffs were altogeteer wrong in embarking in litigation. The corporation also had made assertions with regard to their works which turn out to be unfounded. He, therefore, decided "that the plaintiffs are entitled to an order upon the corporation which will secure, within a reasonable period, the completion of the works in a workmanlike manner and a water-tight condition." Both parties had been much to blame; the one for needless litigation, the other for having so long resisted what they were never entitled for one moment to resist. The corporation must be limited in the conduit to 6 ft.; there must also be the right of inspection on the part of plaintiffs, the parties to agree upon a neutral engineer, and justice will be done by the corporation paying the plaintiffs 300*l.* towards their costs. Finally, six months were named as the time for completion.

DUST-TUBS.

THE vestry of St. George, Hanover-square, considered last week the motion of Mr. Walker "that this vestry recommend the general use in this parish of daily dust-tubs, and abolition of dust-bins, and that the inhabitants be recommended to burn their waste paper and vegetable refuse, instead of throwing the same into the ash-pit, and thereby prevent foul smells from the same entering their houses to the great injury of health." There could be no doubt that dust was inefficiently collected in the metropolis, and that its accumulation was prejudicial to health. He proceeded to quote from an article in the *Builder* bearing on this subject, and urged that the recommendations therein ought to be carried out. There were two difficulties to be met—the ignorance of domestic servants and vested interests. The wages paid to dustmen by contractors were insufficient; hence black mail in the shape of beer money."

Mr. Brown seconded. Dr. Appleton, as a medical man, did not see how waste paper could be prejudicial to health as a nuisance: it would be far better to have it remade into paper. Besides, the motion, if carried out, would be a great addition to the burden of the rate-payers. Dr. Schulhof had tried the experiment with success. Mr. Sapwell had tried the experiment, and without success. The motion being put, was lost.

THE COSMOPOLITAN LEAGUE OF INDUSTRY.

SIR,—The London Registrars of the Cosmopolitan League of Industry—in reference to the letter which you were so good as to insert in your issue of July 30th, 1870, and in which the then sole object of the London Branch of the C.L.I. was incidentally detailed,—desire that I should inform you that since that date the London Branch has been incorporated as a separate Associate League of the Cosmopolitan League of Industry, under chapter xxviii. of the "Monitor Universal," a printed copy of which I send.

On inspecting that document, you will observe that two additional objects have been inserted as conditions precedent; the statutory objects of the "London League of Industry" now being,—

"1st. The knitting together in one common bond of brotherhood of all such persons as are honestly determined to earn their own livelihood and that of those dependent upon them; and who, at the same time,—as all good and true men should do,—utterly repudiate all idea of living upon the toil, slavery, financial bondage, national or industrial indebtedness, or other moral, mental, or material degradation of their fellow-creatures.

2nd. The establishment of a just and proper representation of those who are dependent for their subsistence upon their daily labour; and the reviudication, by just and proper means, of all land and other trust properties which have been violently, unjustly, or fraudulently wrenched, obtained, or withheld from those who are the rightful trustees and users thereof.

3rd. The general advancement of the moral, mental, and material interests of all persons engaged in useful arts, trades, occupations, or pursuits."

I have the honour to be, &c.,

FREDERIC RIDDLE,
Chancellor, London League of Industry.

Countersigned,—

J. G. C. C. GODSMAN,
Late London Chancellor, C.L.I.

DANIEL SMITH,
Registrar on behalf of the London Registrars, C.L.I.

VENICE.

ALLOW me, in reply to the comments of "Architect" in your last number, on "My First Night in Venice," to acknowledge the justice of his correction as to the authorship of the Church of "Santa Maria della Salute." I was led into the error of ascribing it to Palladio by a somewhat obscure passage in Eustace's "Classical Tour." But, while thanking him for his correction, I demur to accepting his opinion of its merits. Eustace, who (though he does speak irreverently of St. Mark's) is an authority on Classic work, calls it a "noble church," and I cordially agree with him,—superabundant angles and inverted consoles notwithstanding. Again, the fact that it does not belong to *quite* the best period, is not material. As the only church visible (to me then), it might represent and recall the many others which do so, and justify the allusion to the "masters" of the Venetian School, in what "Architect" is pleased to term my "enthusiastic song"—but which I aimed to make only a truthful description of a scene and its associations which greatly impressed me at the time, as it has doubtless done thousands before me, by its extreme beauty. Σ.

ZINC AND PAINT.

In the *Builder* for October 28, p. 856, I read with great surprise a paragraph stating that the paint invented by M. Artus was useful for zinc in roofs, because it had "*hitherto not always been found durable.*"

Having, for many years, with the entire support of the Vieille Montagne Company, insisted that zinc exposed to the weather required no paint, but was efficiently protected, when thick enough and pure, by its own hard insoluble oxide, I felt sure that a mistake had been made, and set to work to unravel it. I now find that the paragraph was taken from a Parisian journal, the *Liberté*, and on application to the Secretary of the Académie des Sciences, I have received an extract of the proceedings at the sitting on Feb. 25, 1871 (copy of which I enclose), when M. Artus made his communication, and you will see that while it states that the paint protects a zinc roof from the heat of the sun, there is not one single word alluding to the question of durability.

As the statement was quoted as having been made by M. Artus,* the Company's Superintending Architect in Paris, it had an especially damaging aspect, and the Company trust you will insert this explanation.

The difficulty of tracing the matter has occasioned the delay.

JAMES EDMESTON,
Architect to the Vieille Montagne Zinc Mining Company.

RATING CHAMBERS.

THE QUEEN *v.* THE ASSESSMENT COMMITTEE OF ST. GEORGE'S UNION. — CHAMBERS RATED AS HOUSES.

The question in this case (Court of Queen's Bench, November 18th) was one of considerable interest to the occupiers of Victoria-chambers, Westminster—namely, whether they were liable to be rated separately for their apartments, or whether the building was to be rated as a whole, on the principle in operation in the case of the relations between landlords and lodgers.

The question came before the Court as an appeal by the occupying tenants, against the decision in favour of the Assessment Committee.

The Court having heard Mr. Poland argue for the appellant, without calling on Mr. Manisty, Q.C. (with whom was Mr. Streeten), for the respondents, the Assessment Committee,—gave judgment, holding that every one of the distinct tenements, 117 in number, was rateable to the poor and other rates paid by occupiers, and that the valuation of each of those separate tenements in the assessment list was right. The agreement into which the occupiers entered on taking possession had all the characteristics of a lease, and the lessors had none of the power belonging to a landlord in the case of a lodger.

Assessment confirmed.

A HINT TO THOSE WHO MAKE TENDERS.

SIR,—We are often puzzled with the great disparity observed in the tenders published in the *Builder;* but if the method adopted by the tradesman whose "tender" I inclose were to be followed, and all were to make the same liberal offer, then where would the "lowest or any tender" be found? But the method seems to save all trouble of taking off quantities, making calculations, or even inspecting plans or specifications, and may be useful to contractors generally, if made public through the medium of the *Builder*.

M. C.

[True Copy.]

"SIR,—I shall be glad to do the plumbing, glazing, and painting required in the house proposed to be built at Saltburn, according to plans and specification (which I have not examined), for 5*s.* less than anybody else. I will further guarantee to complete the work before asking for any part of the money.—I am," &c.

UNSAFE LANDINGS.

WITH reference to our report of proceedings, St. George's, Hanover-square, Mr. Barratt Lee wishes it understood that "the gentleman referred to has been paying *paving rates* for more than twenty years past, and he is now called upon to renew a public footpath for which he has already paid so long for the *public benefit.*" In his reply, he submitted,—

"That as the aforesaid landings have been, and are used for the public benefit, I am advised it rests with the parish to do the renewals for which paving rates are paid; and that if any accident should occur at any time through the dangerous condition you mention, the responsibility remains with the parish."

SCHOOL BOARDS.

The Metropolitan School Board.—It has been resolved by this Board, on the motion of Mr. W. H. Smith, M.P., to temporarily hire buildings suitable for school purposes, pending the erection of schools of their own. Mr. Smith stated that, although sites for schools had been widely advertised for, only one had been secured, and only three or four others could be obtained without having recourse to the compulsory powers conferred upon the Board. He estimated that two years would elapse before the Board would be able to meet the educational requirements of the metropolis by the erection of new schools. This statement was controverted by Mr. Freeman.

Proposed New Schools in Shoreditch. — The London School Board have given official notice of intention to take three plots of land, situate in Shoreditch, for the purpose of erecting thereon school-houses in which a public elementary school may be carried on in accordance with the provisions of the Education Act. The places so described are at the corner of Nelson-street and Dove-row; the north side of New-street, between Cannon-street and Maidstone-street; and the north side of Gloucester-street.

* Not in this journal.—ED.

TROWBRIDGE DRAINAGE.

AT the end of last year the Local Board instructed Messrs. Gotto & Beesley and Mr. Estridge, engineers, to submit plans, report, and estimates for the drainage of Trowbridge and purification of the river Biss. The scheme proposed by the engineers includes a main valley line of sewer, the completion of the branch sewers in the town, and the pumping of the sewage for the purposes of irrigation, as well as certain provisions for filtration, to prevent the pollution of the river at the different manufactories. The estimated cost of the public works is 15,000*l.*

The Board, at the last meeting, resolved to take immediate steps to carry out the drainage works, and instructed the engineers to prepare the necessary plans and specifications.

CEMENTS.

SIR,—About a month since I was on the roof of Milan Cathedral, where I was much struck by seeing the slabs of marble, of which it is composed, being jointed with cement, instead of lead. The man at work told me it was Turco mastico, and said that neither frost nor sun affected it. Certainly the sun does not soften it, for, though it was scorching hot at the time, the old cement was as hard as iron. It was a white powder melted, and applied in the ordinary way, the joint being fined off with a hot iron. At this time, when concretes and cements are so much engaging public attention, I am sure you would oblige your numerous readers by learning for them the nature of this cement, and by your saying where and at what price it can be obtained in England.

T. A. H.

THE CO-OPERATIVE MOVEMENT.

AT a meeting of the Social Science Association, held in their rooms, in Adam-street, Adelphi, Mr. Thos. Hughes, Q.C., M.P., read a paper on "The Present State of the Co-operative Movement," which led to some discussion. Mr. Hughes stated, in the course of his address, that in 1865 there were 441 registered co-operative societies, which made returns, showing a share capital of 1,164,333*l.* In 1870 the number of returning societies had risen to 749, showing an accumulated share capital of 2,034,261*l.* Should the present rate of increase continue, as there was every reason to expect, the co-operatives would number 1,000,000 heads of families, and find themselves in the possession of upwards of 100,000,000*l.* of capital, within the lifetime of the present generation. In the past year a cash business was done, amounting to 8,204,466*l.*, realising a net profit of 555,435*l.*, or a clear gain of 27 per cent. on the capital. Nor was this all; for some societies, such as the Monkwell-street Civil Service Society, purposely made no profits at all, but reduced prices, instead, to the lowest point; so that the average profit might probably be reckoned at little less than 30 per cent. But the gain of profits in money was, after all, only a small part of the benefit. These societies had secured their members from adulteration or fraud of any kind; they had destroyed indebtedness by the ready-money business; and they had given business habits and experience to a great number of persons. These remarks, however, related almost exclusively to societies employed only in "distribution." The number of "productive" associations had been diminishing, for the simple reason that the qualities needed were of a higher and rarer kind than those required for the successful conduct of a store. Mr. Loyd Jones, a veteran advocate of co-operation, expressed his entire concurrence in nearly everything the chairman had said as to the progress and prospects of these societies, at least in the north of England, with which he was best acquainted. He believed that upon the success of this movement depended the safety of the country and its constitution. Mr. Hodgson Pratt, Mr. Rawlinson, C.B., and other speakers expressed themselves in favour of the movement, which some of them believed to be the best foe of Communism.

CHURCH-BUILDING NEWS.

Tamworth.—A meeting has been held in the town-hall, under the presidency of the vicar, with the view of taking measures to complete the restoration of the interior of the parish church. The chairman read a report from the restoration committee, from which it appeared that 3,650*l.* had been paid for the work already done, leaving a deficiency of 60*l.* Mr. Willington recommended the removal of the galleries, which he regarded as the greatest of the remaining disfigurements, and offered a donation of 100*l.* Mr. Jennings suggested that the chief difficulty in removing the galleries lay in their having had a large grant from the Lichfield Society on the faith of a certain increase of accommodation. Mr. Briggs suggested that the Diocesan Society should be communicated with.

Waterford (*Bengeo*).—The corner-stone of a new church in the village of Waterford, an outlying hamlet of the parish of Bengeo, has been laid. The site of the new building is at the commencement of the new road leading from Waterford to Hertford, and within a short distance of the old place of worship, on rising ground. The church is the gift of Mr. Robert Smith. It will be Early Decorated, and built of Kentish rag stone, with Bath stone facings. It will consist of nave, chancel, and vestry; will be 81 ft. long and 23 ft. wide, and, when finished, will accommodate some 150 persons. There will be an open timber roof, and the spire will be shingle covered. The floor is to be laid with tiles, and the whole of the interior fittings of the church will be of oak. The reredos is to be of carved stonework, with alabaster shafts. The organ is to be situated in the north side of the choir, and in the winter season the church will be heated with hot air.

Thrumpton (*Notts*).—The quaint ivy-grown village church of Thrumpton, Notts, has recently received considerable improvement, Mr. Street being the architect, and Mr. Clipsham the builder. The alterations consist of general repair, and the following new works:—Roofs, floors, sittings, oak doors, pulpit, font, and altar; the chancel is also new, with stained-glass window at east end, and alabaster reredos. A new organ is substituted for the old one. The restoration has chiefly been done at the expense of Lady Byron.

Lower Clapton.—A new church, dedicated in honour of All Saints, has lately been erected in the district of Clapton Park, Lower Clapton, and was consecrated by the Bishop of London, on the 2nd inst. The church consists of nave, aisles, chancel, with sacristies for clergy and choristers on the north side, and south aisle, in which will be placed the organ. At the west end of the south aisle of the nave it is intended to erect a large and lofty tower. The nave has five bays, lighted at the west end by a large five-light window, and at the north and south sides by lofty two-light clearstory windows. The aisles have single-light windows, and lean-to roofs. The chancel is rectangular, with a large five-light window, the head of which is filled with Geometrical tracery, at the east end. On the south side of the chancel are a piscina and triple sedilia, and on the north side a credence-table. The altar is raised eight steps above the level of the nave, and over the re-table is the centre panel (the only portion at present executed) of the reredos, representing the Crucifixion. It is intended to employ coloured marbles and alabaster in the completion of the decorations of the east, and adjacent parts of the north and south sides of the chancel. The font has an octagonal bowl of Sicilian marble, with panels filled with the sacred monogram, &c., on the sides facing the cardinal points. The pulpit is of Caen stone, with marble columns at the angles, and alabaster capitals and bases. It is square, canted at the angles, at each of which is a dog-tooth enrichment; and on two of the faces are quatrefoil panels, filled with coloured marble, having crosses of alabaster in the centre of each. The seats in the nave and stalls in the chancel, together with all the doors of the church, are of oak throughout. The walls of the church are of

brick, faced externally with Kentish rag, and internally with red brick, relieved round the arches, and horizontally, by black bands. The church is designed to contain 800 worshippers, and has been erected chiefly by individual subscriptions and private munificence, aided by a grant from the Incorporated Church-Building Society. The cost hitherto has been between 7,000*l.* and 8,000*l.* The architect is Mr. Francis T. Dollman, and the contractors for the erection of the building are Messrs. Dove, Brothers.

Beswick. — The church of St. Margaret's, Beswick, near Beverley, has been consecrated. The new edifice, to seat about 130 persons, is built upon the site of a church which at the time of its being pulled down was in a very dilapidated condition. It was built in the most ordinary manner, mud, wood, and thatch forming a great part of the structure. It, however, dated back several centuries, small portions of Norman work being discovered amongst its stonework. Its demolition, upon the late Lord Hotham undertaking to replace it with a stone building, was not done too soon, for its condition was such than when the seats and other fittings were taken out it literally fell down. The new building is of Early Decorated character, and formed of nave and chancel, a vestry on the north side, and a good-sized porch on the south side. The interior is lined with ashlar stone. The chancel has three windows, and arcaded between them with carved caps and moulded bases, the reredos of Caen stone, with arches, carved caps, moulded bases, &c., and a credence on the north side of the altar-table, sedilia, altar-rails, pulpit, and reading-desk, are all in oak. The whole of the seats are made of pitch-pine varnished. The floor is laid with encaustic tiles. The doors are of English oak, and a pair of wrought-iron gates are fixed at the entrance to the porch. At the west end of the nave is a small tower, under which the font is placed. The walls are faced with Bradford wall stones, beaded and pitch-faced. The whole of the dressings are of Bath stone. The tower is finished by a spire, the total height of which is 75 ft. The roof is covered with green Welsh slates, and the windows are glazed with Hartley's cathedral glass. The ceiling of the nave and chancel is boarded, and wagon-headed. The churchyard is surrounded by a stone wall, and has entrance-gates of oak, with ornamental stone pillars.

Swallowfield.—All Saints' Church, Swallowfield, which has been restored, has been reopened for divine worship by the Bishop of Oxford. The church is an ancient edifice, and had formerly a wooden belfry and steeple. The register dates as far back as 1540, and on one of the exterior walls is a small memorial stone of the date of 1650. The restoration of the church is mainly owing to Sir Charles Russell, who contributed 500*l.* to the restoration fund. The work has been chiefly carried out by Sir Charles's own workmen, the masonry having been done by the Messrs. Wheeler, of Reading. Mr. Joseph Morris, of Reading, was the architect, and under his direction and according to his plans the work has been completed. The church is heated with hot-water pipes, supplied by Mr. S. Spencer, Reading. The church stands upon a hillock enshrouded in trees, at a corner of Sir Charles Russell's park. As the chancel walls were very dilapidated, it was determined to rebuild them, and, whilst pulling them down, the old Norman windows, which now occupy the east wall, were discovered. The south doorway is also Norman, but of a much plainer character. The centre portion of the eastern triplet window had been removed about three centuries ago, and a Perpendicular window was then inserted. In the north side of the chancel there is a two-light window of the Decorated period, and on the south side of the nave there are two square-headed windows of a later date; the rest of the windows are new. The belfry is at the west end of the church, and is constructed of oak framing, which has been restored and filled in above the roof with brick nogging; new belfry windows have been inserted, and the spire has been covered with oak shingles. The chancel is paved with plain coloured tiles, and the space within the rails with encaustic tiles, some of the patterns being made to match the old tiles found in the church. The nave is floored with black and red Staffordshire tiles, with an ornamental iron grating in the centre, which conceals the hot-water pipes by which the church is warmed. The roofs are old, but before the restoration they were ceiled off; they are now thrown open, exhibiting all the timbers with plaster between. The nave is fitted with stained deal benches, the ends shaped and chamfered. A pierced oak dwarf screen separates the nave from the chancel, and the latter is fitted with oak benches and altar-rails, wrought out of the old oak from the roof of Arborfield Church. This transept is faced externally with stone, whilst the remainder of the church is flinted with white mortar joints and stone dressings. Adjoining the Russell pew a faculty pew existed belonging to the Standish family, in a most objectionable form; this, however, has been removed, and its position is now marked by a memorial window, erected at the expense of the former owners of the pew; this window, consisting of three lights, with large cinquefoil above, represents in one design the "Transfiguration of Our Lord." The east windows have been filled with stained glass to the memory of the late Sir Henry Russell, and Henry his eldest son, and are erected at the cost of Sir Charles Russell. They consist of three narrow lights, with a bull's-eye above, and illustrate the Crucifixion, the Nativity, and the Resurrection; in the upper part is an emblematic representation of the Holy Spirit. On the south of the chancel a window has been placed to the memory of Mr. de Winton and his daughter. It is the gift of the Rev. J. Kitcat, and consists of two lights, in which are represented the Annunciation and the Presentation in the Temple, whilst an angel bearing the motto, "In terra pax," occupies the tracery. These windows have been executed by Messrs. Hardman. In the south wall of the nave a simple piscina was discovered, and this has been preserved as a relic. A reredos has been erected as a gift to the church by Colonel and Mrs. Dawson Green; the work has been executed by Mr. Earp, from the architect's designs. It consists of a Norman arcade (to correspond with the east window), wrought in Caen stone, and relieved by red marble shafts and alabaster bands, with zigzag mouldings delicately carved; the central panel is wider, with a trefoil head, and is filled with a carved subject, representing the institution of the Lord's Supper. The arcade does not extend the whole width of the church, but the sides are filled with a geometrical design, executed in coloured cements upon a Caen stone ground-work. The old oaken south porch is being restored.

West Allandale.—Ninebanks Church, situated in West Allandale, and three miles from the village of Whitfield, has been restored, and re-opened. The old church had fallen into a ruinous state. The present church has been built upon the same site upon which the old one stood. Mr. Haswell, North Shields, was the architect, and the contractor was Mr. Adamson, of Eggle-stone, near Barnard Castle. It has cost 800*l.*

Crowton.—The new church of Christ Church, Crowton, has been consecrated by the Bishop of Chester. Crowton formed part of the parish of Weaverham; but some time since it was decided to form a new district and build a church for that district. A site was given by Mr. R. O. Leycester, Toft Hall. The building is in the Decorated style. Mr. Pearson, of London, was the architect. The benches in the church, which are of pitch-pine, are all open and free. The pulpit, reading-desk, and lectern are of carved oak. There is room in the church to seat 250 persons, and the whole cost of the building is estimated at about 2,000*l.* Three bells have been presented by the Hon. Miss Lascelles. The building contract was undertaken by Mr. S. Drinkwater, Northwich, under whose supervision the work has been carried out. The stonework has been carried out by Mr. John Holland, of Castle Northwich, and the brickwork by Mr. W. Leicester, of the same place.

Dale End (Birmingham).—Some much-needed improvements have been at length carried out in St. Peter's Church, Dale End, though the greater portion of the work intended to be undertaken has not yet been done, the necessary funds not having been raised. The three-decker pulpit, reading-desk, and clerk's desk, which obscured the view of the chancel, have been removed. The pulpit, which now stands by itself, has been decorated by Mr. Sears; and there are a new oak lectern and reading-desk. Messrs. May & Mountain have placed a heating-apparatus, at a cost of 103*l.*, in the edifice. The masonry part of the work has been done by Mr. Hall, builder. The interior of the church has not been painted and coloured for the past twenty years, and it is proposed to clean and recolour it. The whole of the work, which includes the repair of the roof, will involve an expenditure of 400*l.* or 500*l.*

Cambridge.—The rapidly-growing district in and about the parish of Grantchester, of which "Johnny Cook's Corner" may be considered as the centre, is becoming an important suburb of Cambridge. The Master of Corpus Christi College presented a freehold site for a church, funds were raised, and it was decided, after discussing the relative advantages of wood and iron, to construct a temporary church of the former material. Mr. R. Reynolds Rowe was employed as architect, and a contract was entered into for the erection of the structure, with Mr. Hazell, builder, the result being a structure, at small cost, but with ecclesiastical appearance. It consists of a nave, aisles, well-developed chancel, organ-chamber, and vestry. All the woodwork inside is painted. The roofs are slated, and the gables terminated by iron crosses; the windows are glazed with opaque glass, so as to obviate the use of blinds, and are made to open freely.

Madley (Herefordshire).—Madley Church has been allowed to fall into a sad state of dilapidation. The roof is unsafe; the casements of the windows, which are large, and of which there are a great number, are decayed; and the whole church is cold and damp, the floor never having been excavated or drained. Mr. Kempson, the architect employed, has sent in a report, of which the following is an extract from his estimate for the works necessary to be undertaken:—The roofs, 1,285*l.*; glazing, 335*l.*; drains, 50*l.*; plain tile paving, 600*l.*; heating, 200*l.*; seats, 650*l.*; painting, oiling, &c., 100*l.*; doors, 100*l.*; stonework, about 300*l.*; total, 3,620*l.* This sum does not include the architect's fees, expenses, &c.; and he concludes his estimate by saying:—Pulpit, altar, reredos, credence, altar-rail, chancel screen, and oak panelled ceiling in tower would also probably be required; but the cost of these last would entirely depend upon the funds at command." The parishioners are anxious that the church should be thoroughly restored; but its unusually large size, far beyond the requirements of the parish, makes it impossible that the inhabitants can raise sufficient funds. The non-residence of many of the landowners increases the difficulty.

Matlock. — The parish church has been re-opened after a restoration, at a total cost of over 2,000*l.* The contractors for the work were Messrs. Buxton & Sons, of Lea and Matlock Bath, for the woodwork, and Mr. A. Bridge, of Matlock, for the stonework. The plumbing and glazing were done by Mr. Keeling, of Matlock, and the whole has been carried out under the superintendence of a clerk of the works. On the 26th of April, 1870, invitations were offered to some half-dozen selected architects asking them to send in designs in competition for taking down the old nave and building up a new one. The architects who sent in designs were Messrs. Hine & Son, Nottingham; Mr. Hull, Mr. Benjamin Wilson, of Derby; and Messrs. Wilson & Oldham, Manchester. The designs of Mr. B. Wilson, of Derby, were chosen by Mr. Blomfield, architect, on the part of the committee. The church, which is dedicated to St. Giles, contains sitting accommodation for 500 persons in open benches, and consists of nave, north aisle, chancel, organ-chamber, and a transept on the north side. It is built of stone throughout the interior, having a boasted surface, and the exterior hammer-dressed stone with cleansed dressings. The nave is divided by three arches on each side with stone octagonal piers, having moulded caps and bases and cleansed stone arches. At the east end of the north aisle is a transept erected at the sole expense of the late Mrs. Knowles, having a large three-light window (traceried), which at some future time it is proposed to fill in w th stained glass. The organ-chamber is situatedion the east side of the transept, with which it is connected by two Gothic arches, and is open to the chancel by another arch. The old arch from the nave to the chancel has been taken down, and another new one substituted. The western archway exposes to view a window in the old tower. This archway was, previously to the restoration, quite blocked up, and the whole is lighted by windows with traceried heads. The roofs are trussed rafters, open-timbered roofs covered with wrought boarding, and has a very pleasing appearance. The whole of the interior woodwork is stained and varnished. The pulpit is of white Ancaster stone divided into Gothic panels, which are filled in with red Mansfield stone, with a moulded and enriched capping. The font is also of Ancaster stone, and is octagonal in plan, with columns at the angles in Mansfield stone. Owing to the small amount of funds at the disposal of the committee, the idea of providing a new pulpit and font were aban-

doned for the present. However, Mr. J. C. Arkwright, at his own cost, instructed Mr. Wilson to provide them. The church is heated with hot water by Messrs. Crump, of Derby, at a cost of 120*l*. The lighting is by brackets, &c., to the nave and aisles, and by standards to the chancel, relieved in blue and gold. These have been supplied by Messrs. Hart, Son, Peard, & Co., of London. An additional school-room was opened in December last, at a cost including the site, of 561*l*. 17s. 6d.

DISSENTING CHURCH BUILDING NEWS.

Richmond (*Surrey*).—The Vineyard Congregational Chapel, Richmond, has just been re-opened, after enlargement. The chapel has been lengthened by about 20 ft., and its acoustic qualities improved. A five-sided apse, with groined roof, has also been added. Underneath three additional class-rooms and a room for the business meetings of the managers of the church are obtained, together with a heating-chamber, containing a "Gurney's" stove. Fronting the street a porch has been added. The whole has been executed, at a cost of about 800*l*., by Mr. George James, builder, London, from the designs and under the superintendence of Mr. William Burnet, London.

Burton-upon-Trent.—A new Wesleyan Chapel has been opened here for divine service. The site is at the corner of Station-street and Union-street; the building forming a prominent object on the approach from the railway station to the town. The style is Early Decorated. The elevation to Station-street has a large gable, pierced by a fine five-light traceried window (which is intended to commemorate the contributions of Mrs. Adams to the building fund), below which is a canopied entrance to the body of the chapel. The Union-street elevation is broken up by four pointed gables, each of which contains a two-light traceried window to give light to the body of the chapel and the galleries. The plan of the chapel, which contains 845 sittings, is in form of a parallelogram, being 51 ft. wide, 60 ft. in length on the ground floor, and 84 ft. in length on the gallery level, the galleries being recessed back over entrance vestibule and vestries. The main body is divided lengthways into four bays by cast-iron columns, with moulded capitals; these columns being used to support the galleries and framed principals of the roof, which are exposed and stained, the spandrels being filled up with perforated boarding. The galleries are approached by two staircases, one on each side of Station-street front. The height to the top of the ridge is 63 ft. The materials used in the erection are pressed red brick facings, relieved by bands of blue bricks, and Bath-stone dressings, &c. The tower and spire occupy the corner of Union-street and Station-street, and together reach the height of 120 ft. to the top of vane. The spire is of Bath stone, relieved by Hollington stone bands. The work has been carried out by Mr. George Lilley, builder, Ashby-de-la-Zouch, and Mr. David Bassett, stonemason, Burton-on-Trent, under the supervision of Mr. Edward Holmes, architect, of Birmingham; their joint contracts being 3,365*l*. The gas-fittings were supplied by Mr. William Nicholls, of Burton-on-Trent. The system of warming adopted is that of Messrs. Haden & Son, of Trowbridge; and the carving has been executed by Mr. Thompson, of Nottingham. It was intended, when the contract was entered into, that the spire should be one of timber and slate, 150*l*. being set down for that part; but Mr. Bassett was in favour of a stone spire, and himself defrayed the additional cost.

Braintree and Bocking.—The Braintree Congregational Chapel has been reopened for divine service, after having undergone a restoration, enlargement, and embellishment. The chapel is a rectangular building, of the usual Classic type so much in vogue during the last part of the eighteenth and the early portion of this century. Its internal dimensions are 68 ft. by 50 ft. No attempt has been made in the recent alterations to change the character or to interfere with the main structural portions of the building; the roof, however, which was defective in its covering, has been close boarded, felted, and re-slated; the whole of the windows have been renewed, and the blank windows restored to life. Externally, the principal alterations are in the front, where additional windows, with stone dressings, and bold coupled doorways, with stone columns and pediments, give a new expression to an old face. Internally, the flat ceiling has been broken away, and the centre portion, 26 ft. in width, has been formed into an elliptically-vaulted ceiling, running the entire length of the building, and divided into seven bays by plaster ribs springing from moulded and dentiled cornices. A height is thus obtained of 33 ft., instead of, as formerly with the flat ceiling, only 25 ft. A shallow apse has been thrown out in the rear of the building, in communication with the vestries, expanded by an arch springing from double pilasters: and in this, upon the ground-floor, stands the organ, immediately in front of which are the singers' seat, dais, and pulpit. The galleries have been lowered and the pitch increased, and the whole of the galleries and ground-floor re-seated with stained yellow deal benches throughout. The pulpit is of white deal, with wainscot panels, inlaid with mahogany, ebony, and box woods, supported on six wainscot columns. The table is of pitch pine, with wainscot panels and enrichments. The windows have been filled with enamelled glass, with tinted margins. The walls are distempered in grey, relieved with stencilled devices in cornices and strings. The building is heated by hot-water pipes, and lighted by twelve starlight burners, and wall brackets under the galleries. The general works have been carried out by Mr. James Brown; the benches, pulpit, galleries, &c., by Mr. Walter Letch; and the heating and gas by Mr. Crittall, under the direction of Mr. Charles Pertwee, of Chelmsford, architect. The entire cost of the works, including an iron railing and gates to be fixed in the front, and the removal and improvement of the organ, is 1,780*l*.

Paddock (*Huddersfield*).—The corner stone of a new Congregational Chapel has been laid on a piece of ground immediately abutting on the main road at Paddock, close to the present schools, for the use of the Congregationalists in that portion of Huddersfield, and in view of the large building belonging to the Methodist New Connexion Chapel, nearly opposite where the new chapel is being erected. In preparing the designs, Messrs. Kirk & Sons have adopted the Gothic style of thirteenth century. The plan consists of a nave, 70 ft. by 38 ft., with transept, 21 ft. wide and 7 ft. deep. On each side of the nave and recessed some three yards from the front of the building, are wings, 10 ft. square inside, containing the main entrances, and stone staircases communicating with the gallery. The floors of these lobbies are to be laid with ornamental tiling. Somewhat back from the centre line of the transepts, and fixed upon a raised communion, will stand the pulpit or rostrum, which will be a structure of large size, approached on each side by a flight of stairs. Further back than the transepts, and behind the rostrum are to be two small vestries, with lavatory and retiring-room attached, and also two side entrances, each of which will have a passage and broad staircase, communicating with the gallery for the convenience of the choir, Sunday scholars, and the occupants of gallery pews at this end of the chapel. The The gallery occupies three sides of the building, and though of no great depth at the sides, it gains considerable accommodation at the end and in the transept recesses. The choir and gallery fronts are to be formed of perforated tracery pannelling, and surmounted by a cornice, and the gallery timbers, which will be dressed and visible from below, will be supported on light ornamental iron columns. The basement, approached by one of the back staircases, will contain a large vestry, suitable for week-night services, and also a room for the reception of the heating apparatus. The total number of sittings on the ground-floor and gallery will be about 700. The principal elevation, facing Market-street, will consist of a lofty gable, flanked on each side by the entrance lobbies, one of which is intended to be carried to a considerable height above the eaves, and finished with gables and a steep-slated turret, surmounted by ornamental iron-cresting. In the fronts of the two wings will be the main entrances, consisting of deeply-recessed and richly-moulded pointed arches, filled with heavy doors hung with ornamental wrought-iron hinges, and approached by broad and commodious steps. The sides of the wings will have tall two-light windows with the heads filled with tracery, and the upper part of the tower over one of these wings will also have similar windows on each side. The side walls of the chapel will be pierced by coupled windows with pointed heads, and having deep stone transomes where the gallery crosses them, and between each window will rise a buttress. The transepts are to be finished with gables nearly the full height of the main roof, and each containing a large four-light tracery window. The whole of the roofing (with the exception of a small portion near the ridge devoted to purposes of ventilation) will be open-timbered. All the roofs are to be covered with dressed boarding, felting, and blue slates. The general form of the roofing has been carefully considered by the architects with a view to acoustic requirements. The material of which the chapel is being built is stone from local quarries, hammer dressed, and walled in broken course, with ashlar dressings, from Crosland Hill quarries. The interior is to be finished in stucco lined in courses to represent masonry. The whole of the woodwork throughout will be of red deal, stained and varnished. The body of the chapel and gallery are fitted up with stalls, having moulded ends. These, and, in fact, the whole of the fittings will be worked to special details, supplied by the architects. The chapel is to be lighted for evening services by means of large coronas, suspended from the roof, and also by standards and brackets upon the ground floor. The edifice will be warmed by means of hot water circulating through pipes laid beneath the floor, and covered with perforated iron grating. The contractors for such of the works as are already decided are as follows:—Masons' work, Messrs. William Mallinson & Sons, of Lockwood; joiners' work, Mr. Thomas Walker; plasterers' work, Mr. W. E. Jowitt; plumbers' work, Mr. G. Garton; painters' work, Mr. J. H. Stuttard; slaters' work, Messrs. Goodwin & Sons; and ironfounders' work, Mr. J. W. Harrison,—all of Huddersfield; and the building is being carried out under the immediate superintendence of the architects, Messrs. Kirk & Sons, of Huddersfield and Dewsbury.

Garston.—The foundation-stone of a new Wesleyan Chapel has been laid at Garston. The old building has long been considered inadequate to the requirements of the congregation, and as it will have to be demolished to make way for the new railway, the present was considered a fitting opportunity for commencing the erection of a new chapel. The site selected is between the old Garston-road and Island-road. The new building is to be in the Gothic style, and will accommodate 500 persons. It is to cost 2,500*l*., towards which 1,900*l*. have already been subscribed. The architect is Mr. C. O. Ellison, of Liverpool; and the builder, Mr. Blakeley, of Birkenhead.

Long Sutton (*Lincolnshire*).—The Congregational Church in this town has been re-opened, after having been almost entirely rebuilt from designs by Mr. Tait, of Leicester. The style of architecture is Romanesque, and the material for the walling Whittlesea cream-coloured bricks, with dressings of Ancaster stone. The contractor for the work was Mr. Chappel, of Holbeach.

Banbury.—A new Wesleyan Chapel has been opened in the suburbs of Grimsbury. The new edifice is situated in West-street. The building is of brick, with Bath stone dressings. The style is mixed, but it partakes somewhat of the Grecian. It is approached by a flight of steps, and the front is surmounted by a pediment, in which there is a small circular window. There are pilasters at the front and sides, and at each side of the building there are pediments similar to the one in front. A stone cornice runs all round. The gallery is over the front entrance, and is approached by two flights of stairs, one on each side of the entrance lobby. The pews are open and low-set, and are of deal, stained and varnished. The pulpit is of the same material, and in front of it there is some fret-work, showing a red ground. A cornice runs round the ceilings, on which there are moulded ribs, dividing it into panels. The building is lighted by four pendants hanging from the roof, and two brass standards, one on each side of the pulpit. The height of the chapel from floor to ceiling is about 21 ft. The body of the chapel is separated from the lobby by a partition, in which there are two doors. Besides the chapel, school-rooms have been built. They are behind the chapel, and comprise a school-room, 29 ft. 6 in. by 28 ft.; an infant school-room, 16 ft. by 18 ft.; and four class-rooms, 14 ft. by 16 ft. Adjoining the infant school is a small vestry. Under the school-room there is a large room, 28 ft. by 39 ft., which may be used as a day-school should it be required. At each side of the chapel there are entrances to the school-rooms, which will accommodate 450 scholars. The building is so constructed, that the school-rooms can be thrown

into the chapel at any future time should an enlargement of the latter be considered necessary. The chapel will accommodate 350 people. The ventilation has been attended to, and a heating apparatus has been put in. The total cost of the erection has been 2,250*l.*, being 150*l.* less than was anticipated when the foundation stone was laid.

Birmingham.—The foundation-stones of a new Wesleyan chapel, situated in the Moseley-road, has been laid. The main block of the chapel building, which occupies 58 ft. by 84 ft., contains sittings for 500 persons, 20 in. being allowed for each sitter. The gallery is round three sides of the chapel; and behind the main building is the minister's vestry, which is fitted up with all necessary appliances. Over the vestry is an orchestra, and beneath, the cellar for the heating apparatus. School-rooms and large class-rooms are provided in two wings, standing in the rear of the chapel. The style of the main building is Italian, and it is executed in Birmingham pressed bricks, with stone dressings. The front elevation is imposing, having a frontage to Moseley-road of 68 ft., and an elevation of 46 ft. The entrance-doors, which are placed in the centre of the façade, are surmounted by cornices, and supported by six Corinthian pillars, coupled and standing upon moulded and panelled pedestals; from the cornices rises an ornamental parapet. All the windows and doors on the elevation are provided with carved imposts, moulded archivolts, and carved keys. The whole façade is supported by Corinthian cornices, and an ornamental parapet. The framing of the interior is executed in red deal, stained and varnished. These will be the leading features of the chapel when it is completed. The cost of erection will be 4,325*l.* Messrs. Loxton, Brothers, of Wednesbury, are the architects; and Mr. James Chappelle, of Willenhall, the builder.

FROM SCOTLAND.

Edinburgh.—It is proposed to restore St. Giles's Cathedral in the High-street. The kirk-session taking up the matter in a public-spirited way, have procured plans from Mr. W. Hay, architect, for carrying out the more extensive alterations that were pointed at. The design proposes, as a first step, the entire removal of the galleries and other fittings. The whole interior will then be scraped, so as to clear off the numberless coats of whitewash with which its stonework has been encrusted. A new porch of ornamental woodwork will be erected just within the doorway, and at the back of this, facing the great east window, will be placed the royal pew. This pew forms a conspicuous feature in the design, its enclosure being of oak panelling, suitably ornamented, and the screen behind, which forms one side of the porch, being divided into compartments, with shafts supporting canopies of perforated woodwork. In front of the royal pew are seats for the lords-in-waiting and royal officers; and from the front of these a passage is to be carried down the centre of the church to an inclosure to be formed immediately below the great window. Next to the royal pews there are, on one side of the passage, stalls for the City Magistrates, and on the other, stalls for the members of the College of Justice. The remainder of the area is fitted up with the open benches. In the central area, between the two rows of pillars, the seats are furnished with carved ends and ornamental panels, those in the side aisles being of simpler design. The pulpit, a structure of carved woodwork, is placed against the first pillar on the south side, and the wall-space under the great window is occupied by a reredos, showing eight Gothic panels, wrought in Caen stone. The plans have been approved by the various public bodies who have a right to be consulted in the matter. There remains the question—How to meet the necessary expenditure, estimated at something between 3,000*l.* and 4,000*l.* The *Scotsman* says it is clearly a case for an appeal to the general public, who are, or ought to be, interested in seeing the metropolitan cathedral of Scotland restored to a creditable condition. Such an appeal is about to be made.——Operations are about to be commenced for the erection of the Trinity College Church on the site at the corner of Chalmers's-close, and the new thoroughfare, to be known as Jeffrey-street, now in course of formation. The plans for the building, as originally framed by Mr. Lessels, architect, embraced in their details various features derived from the ancient edifice, whose remains have lain bleaching for a quarter of a century on the slope below the Regent-road. Latterly, however, says the *Scotsman*, it occurred to those charged with the carrying out of the undertaking that a considerable portion of the old church might be reproduced in connexion with the new one. Mr. Lessels accordingly altered his plans so as to give effect to this idea, the method adopted being to join on at the back of the new church what may be regarded as a distinct building, constructed of the old stones, and preserving some of the finest portions of the original. Irrespective of this annexe, the church will be an oblong structure, with its front and main entrance towards Jeffrey-street, and one side abutting on Chalmers's-close. The front view shows in the centre a gable, having its apex surmounted by a cross such as appeared in a similar position in the old church. Immediately under the cross is a circular cusped window, and below this again a large pointed window, with traceried head, after the design of that which occupied the end of the transept in the original building. On either side of the large window is a niche intended to receive a statue, and under it is the principal entrance, being an exact reproduction of the deeply-moulded doorway, with arch of Norman Gothic pattern, which formed a notable ornament of the former church. On the west side of the gable rises a square tower, in which the architect has introduced various features of his model. At the height of 70 ft. the tower takes the form of a broached spire, of octagonal section, which is relieved half way up with a row of dormer windows, and terminates, at the height of 115 ft., in a gilt vane and weathercock. On the other side of the gable, forming the north-east corner of the building, is a turret, carried up from the ground, and finished at the top with a stone roof and ornamental finial, in which, as well as in several other points, details of the old church are preserved. The frontage, including the tower and turret, has a width of 62 ft., with a height of 70 ft. to the top of the cross which crowns the central gable. In the west elevation, the tower shows a doorway giving access to the west gallery.——At a meeting of the City Improvement Trust, Bailie Marshall objected to the plans and elevations of Chambers-street as too ornate, and not in consonance with the style of architecture of the College and Industrial Museum. He moved that the plans be remitted back to the architect, and that a plainer and simpler style of building should be adopted. Eventually the plans were approved of without a division.——The line of tramway between Haymarket, Edinburgh, and Bernard-street, Leith, with loop line by St. Andrew-street, York-place, and Picardy-place, is now opened for passengers to Leith.

Glasgow.—The *North British Mail* mentions a proposal to construct a tunnel, with suitable approaches, under the river Clyde, at Finnieston-street, a central point for a large amount of traffic. The scheme is devised by Messrs. Storry & Smith, C.E., and the works are designed for the accommodation of passengers and all other kinds of city traffic, and, if need be, railway traffic in addition. Messrs. Storry & Smith propose to lay two iron tubes at a proper distance from each other under the bed of the Clyde, one for the north and the other for the south traffic. It is intended to provide each tube with a footway for passengers, a roadway for carts, carriages, &c., and a foot-space for the men having charge of them on the opposite side from that intended for ordinary foot-passengers. Provision is also made for the conveyance of water, gas, and other pipes in the tubes. Estimates are being made with the view of having the scheme submitted to the notice of such persons as are likely to be interested in it, more especially the Clyde Trustees.——New music and assembly rooms are to be built at Glasgow. The new concert-hall is intended to seat from 2,500 to 3,000 auditors, with an orchestra for 600 performers, and a suite of assembly-rooms capable of admitting 250 couples. The total cost is estimated at 121,402*l.*

Dundee.—The Dundee Water Commissioners have decided, by a majority, to bring a new supply of water from Lintrathen Loch to the town by the direct route, and not, as was the alternative proposal, by the Monikie route. The difference in the cost between the two schemes is estimated at about 160,000*l.* The Water Commissioners have resolved, by a majority of 11 to 8, to proceed this session with a Bill for this scheme, and to employ, in the room of Mr. Bateman, Mr. Stewart, C.E., Edinburgh; Mr. Leslie, Edinburgh, to be consulting engineer Plans, surveys, &c., have been ordered to be executed immediately.

Books Received.

The Model Dockyard Handy-Book. With numerous Illustrations. London: 31, Fleet-street. 1872.

THE proprietor of "The Model Dockyard" seems to be an Admirable Crichton. In addition to the many, varied, and beautiful objects fabricated under his personal direction, this interesting little book gives evidence that he is no mean hand at authorcraft. It embraces, in addition to a large amount of information of a popular character, in relation to the special objects of which it treats, detailed descriptions, illustrated, of sailing and steam vessels, and small craft of every variety; and of steam-engines, stationary and portable, marine, and locomotive; with drawings and descriptions of steam-cranes and steam fire-engines. "The Model Dockyard" contains, we believe, actual examples, complete and finished, of all the numerous interesting objects enumerated and illustrated in the Handy-book, and also of the separate parts from which the sailing or steam vessels, the steam-engines, and the numerous other objects presented are constructed, and which are needed occasionally for repair. The Handy-book, and the Repository to which it is a guide, have evidently interested paterfamilias and his boys, twenty thousand copies having been taken during the last six years, in the four editions, each in succession enlarged and greatly improved, that have been published during that time.

Miscellanea.

Proposed Memorial of Dr. Priestley, at Birmingham.—A public meeting has been held at Birmingham, for the purpose of taking steps to establish a memorial of Dr. Priestley, the "Father of Pneumatic Chemistry." Mr. S. Timmins, F.R.S., was voted to the chair, and explained that it was proposed to purchase part of the site of the home at Fairhill, near Birmingham, where Dr. Priestley resided for eleven years. The building was burned down in 1791 by rioters, after which Priestley went to America. In the course of the proceedings it was stated that so hearty would be the response to the movement, that a sum of 3,000*l.* might be raised, and that the memorial should be made of a national character, by the founding of a Priestley Scholarship for the support of a student of science at some public scientific institution. Several gentlemen urged the desirability of erecting a statue to Priestley in the centre of the town. It was ultimately resolved that the memorial should embrace the three objects—viz., the purchase of a site, a scholarship, and a statue. A committee was appointed to carry the resolution into effect.

Metropolitan Improvements. — An important thoroughfare, consisting of three new streets, leading from the foot of Fleet-street to the western end of the Holborn Viaduct, was recently thrown open to the public. The streets, by name St. Bride-street, Shoe-lane, and St. Andrew's-street respectively, run by an easy ascent from Ludgate-circus to Holborn, and are, together, about a quarter of a mile long. A subway, containing the gas, water, and telegraph pipes, extends from end to end; while for the accommodation of the houses to be erected, vaults have been built on each side. The streets are about 40 ft. wide, and the footways have been paved with Val de Travers asphalte. The work has been carried out from the plans of the engineer, Mr. William Haywood, for the corporation of the City of London, by Messrs. Hill, Keddell, & Waldram, the contractors for the Holborn Viaduct, at a cost of about 45,000*l.* Mr. Lidstone was the clerk of the works.

The Whitechapel Baths and Wash-houses.—The first building of the kind erected was in Whitechapel. It was designed as a model, and by the time it was finished a debt had been incurred of some 8,000*l.* The debt has been reduced by half; but the building, after a useful existence of twenty-five years, is now closed, and is about to be sold to pay off the remainder of the debt.

Approaches to the Law Courts.—The Metropolitan Board of Works, at their last meeting, declined to accede to the request of the New Law Court Commissioners, that they would demolish the Church of St. Clement Danes, in order to widen the Strand, and thus improve the approaches to the New Law Courts. The Works Committee were of opinion,—an opinion endorsed by the entire Board,—that the making of approaches to a national building like the new courts of justice should be paid for out of the imperial exchequer. It was stated that the Government had already recognised this principle by expending 7,000*l.* in widening Carey-street, where it adjoins Chancery-lane. The Board further opined that no complete widening of the Strand could be effected unless the block of buildings at the rear of St. Clement Danes Church, and situate in Holywell-street, were demolished as well as the church itself.

Wave Power as a Motive Force.—Mr. S. R. Deverell, of Mount Gambier, South Australia, proposes to erect a shaft in any convenient part of a ship, passing through the upper deck and resting on a lower one, free to rotate either way. To the lower end he attaches a heavy body with its outer extremity supported by a wheel travelling on a circular rail. On the upper end above the upper deck he attaches two bevelled wheels with circular ratchets. These wheels are to be loose on the shaft. Between these wheels he places an arm proceeding from the shaft, and having rival pawls to gear into and work the respective ratchet and bevil wheels. He provides a bevil wheel fixed on the end of a counter shaft, to fit between and gear into both of the bevil wheels on the vertical shaft.

Iron Fronts for Buildings.—A building of a somewhat novel character has just been completed at Derby, according to the *Engineer*. The front of the structure, which has been raised for Messrs. J. & G. Haywood, ironfounders, &c., is entirely of iron, and has been manufactured by the firm. The designs for the building and the decorating and painting have been supplied by Mr. Owen Jones, of London. The building is of a very elaborate character, and presents a striking contrast with some of the shops to be found in other towns. The decorations and painting were intrusted to Messrs. Staton & Co., of Derby. It is stated that a very large trade is being done at the Thorncliffe and Chapeltown Ironworks, near Sheffield, in cast-iron window and door heads, as well as in general castings of this class, which are now largely used in buildings.

New Hall of Holywell Green Mechanics' Institute, Halifax.—This new hall has been opened by Lord F. Cavendish. The erection, which is built upon the site of an old school, is from designs by Messrs. Horsfall, Wardle, & Patchett. It is in the Italian style, and includes a large room, 60 ft. long, 30 ft. wide, and 18 ft. high. At one end is a platform, and at the other a gallery. Underneath this room are a news-room, smoke-room, &c., where games are provided; and on the basement story are kitchen and other conveniences. At the entrance to the large hall is a small cloak-room, and a hoist is provided, by which, in case of tea-parties, &c., provisions may be sent from the kitchen to the large room; which is lighted by sunlights. The institute are indebted to Messrs. John Shaw & Sons for their new hall.

Rebuilding of Surrey Chapel.—It appears that, in consequence of the lease of this well-known place of worship, of which the Rev. Newman Hall is now the minister, being about to expire, the probability is that it will shortly be taken down; and this being so, it has been determined to erect a new edifice in the neighbourhood, which is intended to be of much larger dimensions. A site has not yet been obtained, but it is expected that one will shortly be secured close to the present building, which is one of the main objects desired. Already 10,000*l.* have been raised towards the rebuilding fund; but a still further large sum is required before the new building can be commenced, the estimated cost of the intended new structure, including the land, being little short of 20,000*l.*

Water Power with Mountain Tramways. Mr. William Sanderson, C.E., is engaged at present in making experiments with the object of trying how far it would be possible to utilise water-power on the Himalaya Mountains in connexion with the light mountain tramways.

Amotherby, Malton.—In pulling down the old church here two Anglo-Saxon crosses, several parts of other early crosses, three grave-covers with foliated crosses, and an effigy of a knight in good preservation, were found, and have all been preserved. The grave-covers are of the fourteenth century, and their existence in the old walls was unknown. One bears a Norman-French inscription, "Ici git William de Bordesden. Priez sur la alme." The Bordesden family held possession in the district in the reigns of the three first Edwards, and it is thought probable that the effigy is of one of the family, the shield being barry of sixteen, charged with three boars' heads. The knight is in armour, with surcoat and sword, and spurred feet, resting on cub-lion couchant.

Polishing Metals.—The object of the invention of Mr. H. S. Sanderson, of York-road, Lambeth, is the preparation of blacklead ready for use in a fluid state. The composition adopted consists of blacklead, such as is used for polishing stoves, and for other uses, combined with turpentine, water, and sugar, or saccharine matter, and the proportions which have been found to answer well are to each pound by weight of the blacklead one gill of turpentine, one gill of water, and one ounce of sugar; but these proportions may be varied, and in some cases all the ingredients are not necessary.

Smelting Iron Ore by Steam.—A process, the inventors of which claim that iron ore can be reduced without the admixture of coal or the use of the blast, is noticed in the *Iron Age*. The peculiar process consists in conducting a volume of steam, at the same pressure as that of the ordinary blast, into and over a coke fire, there decomposing the steam and reducing the ore by the additional heat, while sulphur and phosphorus are eliminated by the hydrogen, in the form of sulphuretted and phosphoretted hydrogen.

Costly Follies.—It is stated that the ancient city of York is to have the proud distinction of possessing the largest railway station in England. It is to be built by the North-Eastern Railway Company, at an estimated cost of 200,000*l.* Two or three years have been spent in perfecting the plans, which have now been sanctioned by the directors. Six per cent. on this expenditure shows a rental of 12,000*l.* a year, without the cost of the land!

Elveden Hall, Suffolk.—Mr. G. Mitchell, of Brompton-road, says as to Elveden Hall:—"The chimney-pieces, marble fenders, stoves, and tile hearths, were manufactured and supplied by me to the Maharajah Duleep Singh's own designs; and by a singular coincidence an illustration of one of the said designs has been placed by your printer in my last week's advertisement in the *Builder*."——Mr. Holeyman (not "Holzman") was the decorator engaged.

Pneumatic Despatch. — The reading of papers on pneumatic despatch tubes at the Institution of Civil Engineers, showing the progress that has been made in this mode of transmission, has naturally led Mr. Frederick Gye to allude to the suggestions in this direction made by him in our columns many years ago. His communication will be found in our volume for 1855, at p. 603, and his original proposition was dated 1845.

The Society of Antiquaries.—An exhibition of Stone Implements (Neolithic and Savage) will be held at the Society's apartments, from Thursday, December 7, to Thursday, December 14, 1871, inclusive. It will be opened at the ordinary evening meeting, December 7, when a paper will be read by Mr. John Evans, F.R.S. On the 14th, papers will be read by Mr. A. W. Franks and Col. Lane Fox.

Proposed Friendly Societies' and Public Hall for Stratford.—A meeting has been held to promote the erection of a Friendly Societies' Building and a Public Hall at Stratford. A large room for public meetings, concerts, &c., to hold 1,000 persons, at a cost of 7,000*l.*, is the programme. A committee was appointed to carry it out.

Congregational Memorial Hall. — The Committee of the Memorial Hall Fund have agreed on plans prepared by Mr. John Tarring, architect. The building will occupy a large frontage in Farringdon-street, part of the site of the old Fleet Prison. The cost of the freehold was 28,000*l.*, and the hall and offices, it is stated, will cost as much.

Railway to the Albert Hall, South Kensington.—Parliament is to be applied to next session for the incorporation of a company to form a short railway from the ring line, or metropolitan and district railways, near the South Kensington Station, to the Exhibition buildings and Albert Hall. Application is also to be made for power to form a subway from the South Kensington Station to the Albert Hall.

Tramway Traffic.—The extent to which the tramway traffic in South London has grown can be judged from the fact that in connexion with the Blackfriars and Westminster lines to Greenwich, Camberwell, and Brixton, forty-five cars are daily running.

Temple Subway. — Application is to be made to Parliament for the incorporation of a company to construct a subway across the Thames, from east of the Temple Station to Princes-street, Commercial-road, Lambeth.

Drawing in Oxford.—Mr. Ruskin has offered to give to the University of Oxford the sum of 5,000*l.* sterling for the endowment of a Master of Drawing, in the University galleries.

Society of Painters in Water-Colours.—The tenth Winter Exhibition of sketches and studies by the members of the Old Society is an agreeable collection of 381 works.

TENDERS

For enclosing, laying out, and draining an extension of the burial-ground, Dagenham, for the Dagenham Burial Board. Mr. E. C. Allam, architect. Quantities supplied:—

Potter	£389 0 0
Holmes	386 0 0
Bugbird	375 0 0
Kirk	369 0 0
Goodaw	362 0 0
Hughes	352 0 0
Barwell	348 15 0
Hull (accepted)	325 10 0

For villa residence in Hook-road, Surbiton, for Mr. W. D. Hughes:—

Spearing & Stewart	£613 10 0

For house and laundry at Cliftonville, for Mrs. Smith. Mr. Wm. W. Eldridge, architect. Exclusive of party and boundary walls:—

Blackmore & Howard	£570 0 0

For roads and sewers on the Milkwood Estate, Brixton. Messrs. Wm. G. Habershon & Pite, architects:—

Wilcox	£2,788 0 0
Thompson	2,695 0 0
Taylor	2,663 0 0
Elmore	2,616 0 0
Pearson	2,599 0 0
Young	2,560 0 0
Goodair	2,332 0 0
Haynes	2,300 0 0
Mayo	2,269 0 0
Clark	2,222 0 0
Keeble	2,158 0
Jarman	2,057 0 0
Bloomfield	2,048 0 0

For alterations, additions, and new counting-houses to a warehouse, Wood-street, City. Mr. Herbert Ford, architect:—

Hill, Keddell, & Waldram	£3,500 0 0
Browne & Robinson	3,180 0 0
Meyers & Son	3,124 0 0
Conder	3,100 0 0
Stimpson	2,987 0 0
Henshaw & Co.	2,985 0 0
Riddle	2,984 0 0
Brass (accepted)	2,685 0 0

For addition of wing to the residence of Mr. H. W. Maynard, Wimbledon. Mr. A. R. Barker, architect:—

Parsons & Townsend	£710 0 0
Colls & Sons	667 0 0
Pocock	625 0 0

For alterations to shop, Broad-street, Hanley. Messrs. R. Scrivener & Son, architects:—

Wooldridge	£325 0 0
Barlow	297 0 0
Barley (accepted)	294 0 0

For villa, Stone, Staffordshire, for Mr. S. J. Mountford. Messrs. R. Scrivener & Son, architects:—

Freakley	£1,646 0 0
Wooldridge	1,569 0 0
Barratt	1,557 0 0
Cooke	1,540 0 0
Barlow	1,440 0 0
Whittome	1,397 18 6
Timmis (accepted)	1,325 0 0

For Mediæval furniture, for Dunwood Lodge, Staffordshire. Messrs. R. Scrivener & Son, architects:—

Chamberlain & Co.	£363 3 0
Messrs. Edwards (accepted)	343 4 7

For cottages, Dresden, Longton, for Mr. W. Copestake:—

Newbon	£715 0 0
Inskip	698 0 0
Harvey	691 0 0
Collis & Hudson (accepted)	660 0 0

For parsonage, Oulton, Staffordshire. Messrs. R. Scrivener & Son, architects:—

Cooke	£612	0	0
Barratt	540	0	0
Whittome	539	13	6
Barlow	520	0	0
Freakley	443	0	0
Ratcliffe (accepted)	430	0	0

For houses, Lower Norwood, for Messrs. Courage & Co. Mr. Geo. Elkington, architect:—

Hollidge	£3,621	0	0
Kirk	3,484	0	0
Kent	3,437	0	0
Mitchell	3,412	0	0
Thompson	3,278	0	0
Deavin (accepted)	2,876	10	0

For the erection of buildings, for the Industrial Class at West Kensington, for Sir Ralph Howard, bart. Mr. Thos. Archer, architect:—

Allen & Son (accepted)	£1,390	0	0

For alterations to wine-vaults, Pelham Arcade, Hastings, for Messrs. Ellis, Wilson, & Ellis. Jeffery & Skiller, architects:—

Hughes	£550	0	0
Parks	548	0	0
Bridgland & Others	540	0	0
Rodda	515	0	0
Vidler (accepted)	510	0	0

For roads and sewers, Spencer Park Estate, Wandsworth, for the Right Hon. Earl Spencer. Messrs. Beeston, Son, & Brereton, architects:—

Harris	£1,199	0	0
Aviss & Co.	1,196	0	0
Parsons	1,175	0	0
Wigmore	1,155	0	0
Chappell	1,150	0	0
Neal (accepted)	1,100	0	0
Adamson & Sons	950	0	0

We have been requested to state that the tender of Messrs. Adamson & Sons, for new buildings in Ryder-street, St. James's, under Mr. John Wimble, has been accepted at 6,540*l.*

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We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of Tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests of course with the authors.

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ROBERT HUTCHINSON, County Surveyor.

Offices, Market-place, Huntingdon, November 15, 1871.

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Dublin Castle, 7th November, 1871.

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